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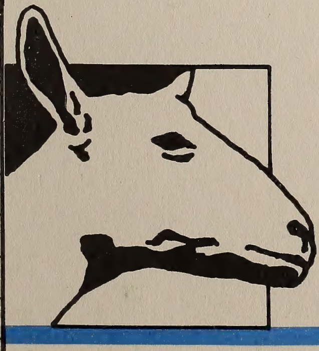
THE DAIRY GOAT

MEMBERS MANUAL



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4-H MOTTO

Learn to do by doing.

4-H PLEDGE

I pledge
My HEAD to clearer thinking,
My HEART to greater loyalty,
My HANDS to larger service,
My HEALTH to better living,
For my club, my community and my country

4-H GRACE

(Tune of Auld Lang Syne)

We thank thee, Lord, for blessings great
On this, our own fair land.
Teach us to serve thee joyfully,
With head, heart, health and hand.

If any portion of this manual is used for another publication, credit must be given to 4-H Branch Alberta Agriculture.

CANADA

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INTRODUCTION

4-H Goat projects are organized to provide experience for boys and girls in the selection and feeding, care and management and exhibiting of Dairy Goats.

The purpose is to develop self-discipline, patience, responsibility, respect, self reliance and pride in accomplishment as skills and knowledge are gained. Handling a live animal, watching it grow for several months and exhibiting the animal has value far beyond the monetary gain which is possible from the project.

4-H CLUB WORK

"I pledge:

My HEAD to clearer thinking,
My HEART to greater loyalty,
My HANDS to larger service,
My HEALTH to better living,
for my club, my community,
and my country."

4-H GOAT PROJECT OUTLINE

In the Dairy Goat Project, members begin with a Female Kid project. This animal will become a Yearling Project, then a Milking Doe Project. For members that are not able to continue through the program in this manner, the Butcher Kid Project or Fodder Project may be more practical.

During the project, the members will learn to:

- recognize breeds of goats
- keep accurate, useful records
- select a good quality kid
- feed goats
- care for breeding stock
- identify and treat common diseases
- identify parts of the goat
- judge goats
- show a dairy goat

To accomplish this, you may work with other members, club leaders and local goat breeders.

You can judge your progress with your animals at livestock fairs, exhibitions and Achievement Days. Achievement Days for goat clubs are usually held in the late summer or early fall to give kids time to develop, since they are born in the spring.

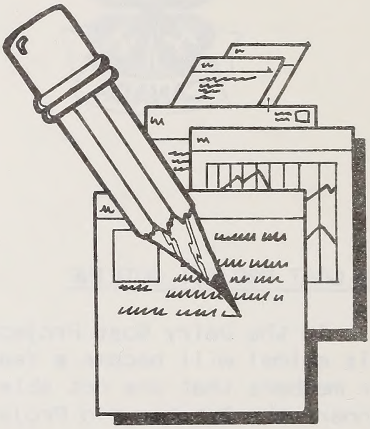
RECORD KEEPING

Record Keeping is a very important part of the training of 4-H Club work. Records should be kept accurately, neatly, and regularly. Record Keeping disciplines a person and provides a valuable store of information for anyone willing to take pride in his efforts.

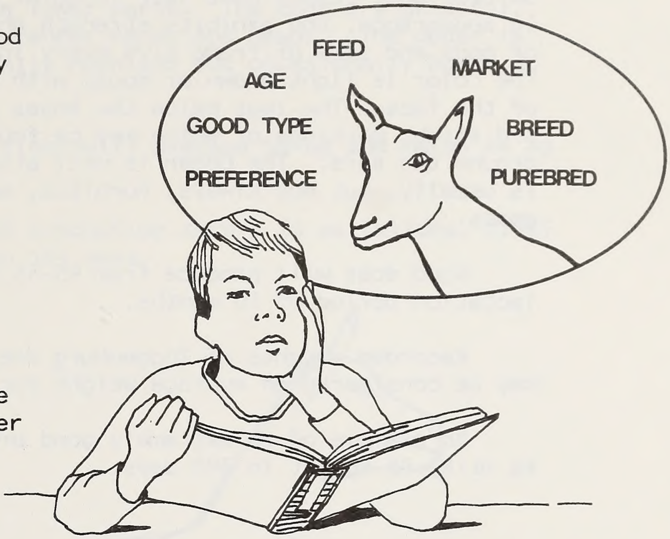
Record Books are available from your Home Economist or Regional 4-H Specialist. All items should be marked down as they occur, so that the Record Book may be referred to at any time, and show the present position of the 4-H project.

If properly done, your Record Book will tell the complete story of your goat; weight, where you bought it, and cost. It will show how much feed of different kinds that it consumed. Enter the figures and remarks in your record book promptly before you forget.

Record keeping is becoming increasingly important to the farm operator today and a thorough understanding of the basic fundamentals will be a tremendous asset in the future.



SELECTING A DAIRY GOAT



There is no "best breed". Good goat breeders have success with any breed of goat. You may wish to study the section on "Breeds of Dairy Goats" before deciding. Remember, if you have good ones, any breed will be the best breed for you.

GRADE OR PUREBRED?

Your goat may be a grade or a purebred. In either case, the sire will be purebred. It is much better to have a good grade than a poor purebred. There is often an advantage in starting with a registered goat. However, don't select a kid just because it is registered. Registration papers do not guarantee that she will be the kind of doe you want to milk in the herd.

What to Look for in a Dairy Goat

1. Dairy Characteristics - straight and strong over the top line, steep and wide in the body, straight and square on the feet, and legs and clean cut in the head and shoulders. Refer to the section on "Judging Dairy Goats" for more details.

2. Large, alert, growthy and upstanding kid.

3. Free from disease and injury.

4. Good appetite, vigorous and healthy.

BREEDS OF MILK GOATS

The main breeds of milk goats found in Canada are the Toggenburg, Saanen, Nubian, French Alpine and La Mancha. These breeds are well adapted to Canadian climate and conditions.

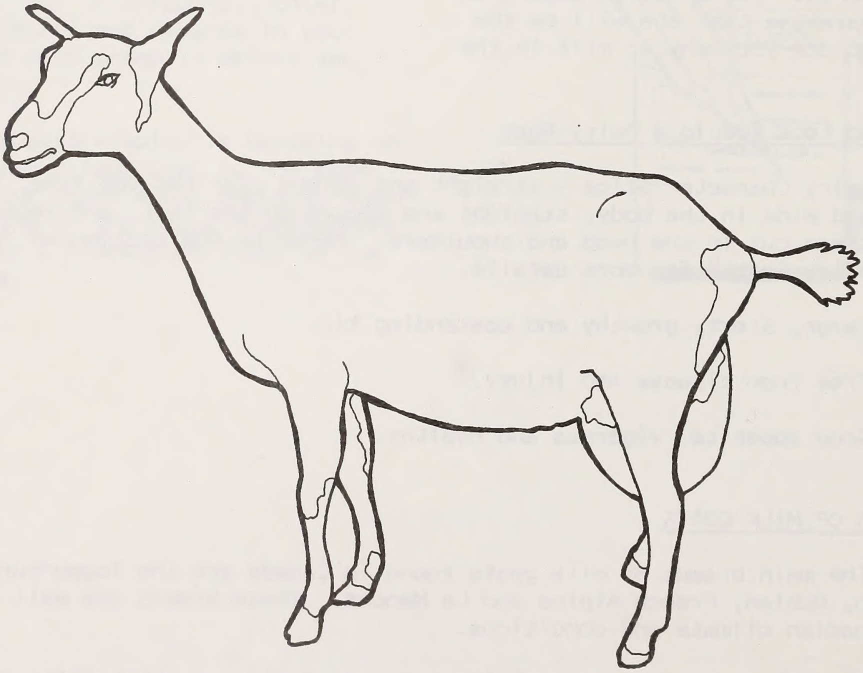
In 1961 there were over 23,000 goats in Canada of which 3000 were in B.C.

TOGGENBURG. The Toggenburg, a native of the Toggenburg Valley of Switzerland, resembles a deer in color and markings. The goat is attractive in appearance, and exhibits strength and good bone development. The depth of body and size of frame give every indication of good milk production. The color is light brown or mouse with a white bar running down each side of the face. The legs below the knees and hocks are light gray or white, and slight markings of white may be found on either side of the tail and around the ears. The udder is well attached, and carried high. The breed is usually, but not always, hornless, and is the smallest of the dairy goats.

Good does will produce from 45-55 kg of milk per day during a lactation period of 10 months.

Recorded weights of Toggenburg does average 40-45 kg while 60-65 kg may be considered an average weight for males.

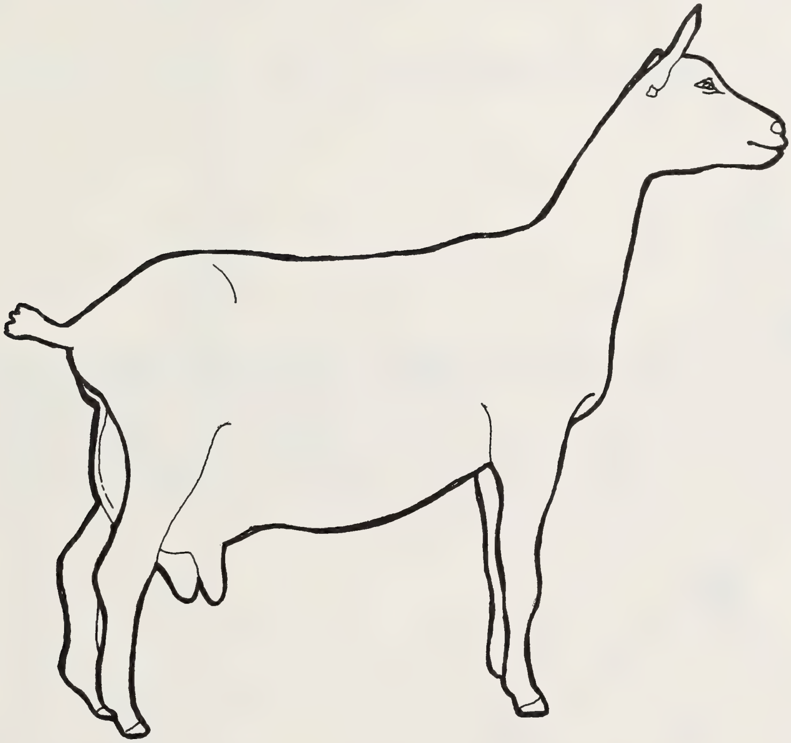
An example of an extremely good production record is as follows: 2,610 kg milk, 92 kg fat in 305 days.



SAANEN. The Saanen is named after its place of origin in Switzerland. It is probably the largest of the breeds. It is solid white in body color with a tendency to creaminess in the lower parts. The does are graceful, possessing height and length, with slender necks and heads. The udder is carried well up. The breed is normally hornless but occasionally horns do appear.

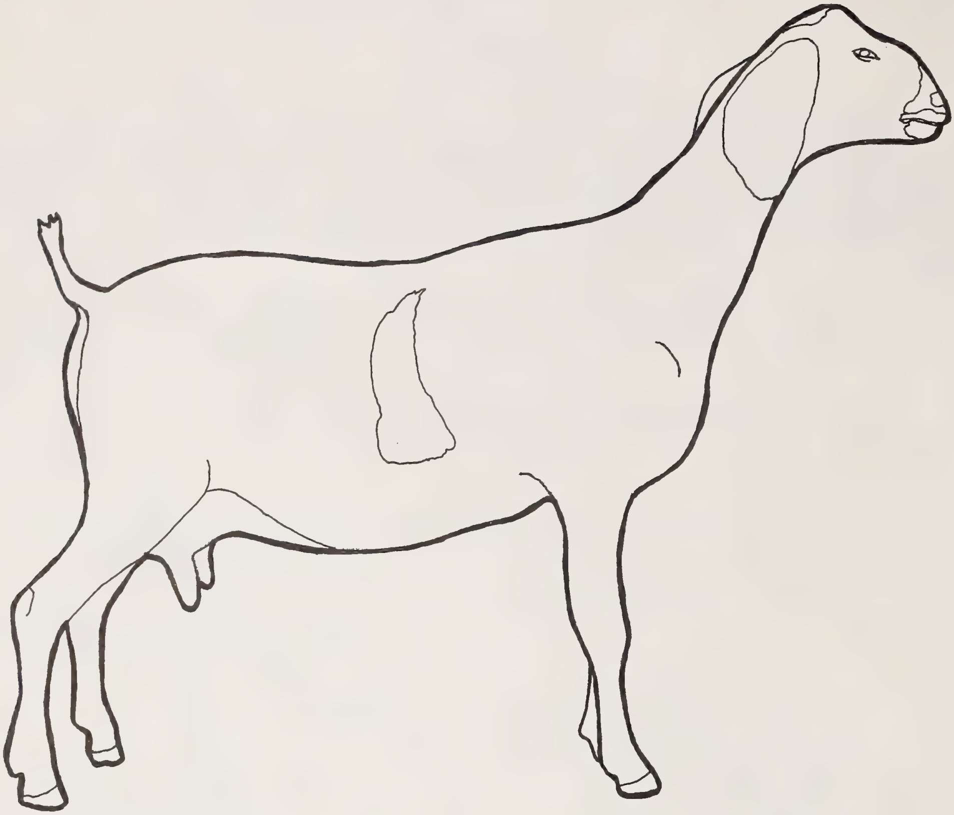
Mature Saanen females in good flesh will average 55 kg and males 84 kg in body weight.

An example of an extremely good production record is as follows: 2,495 kg of milk and 87 kg of butterfat in 305 days.



NUBIAN. The Anglo-Nubian originated in England from the crossing of English does with Nubian bucks from Nubia, in Upper Egypt and Ethiopia. The goats are strong, in all colors from white to black with reddish backs predominating. They have distinctive pendulous ears and bold Roman noses. When horns appear, they lie flat over the head. The breed has the highest recorded butterfat yields.

An all-time record for production by the Nubian breed is 1,987 kg of milk and 102 kg of fat in 305 days.



ALPINE. This breed was probably derived from French-Swiss and Rock-Alpine ancestry and is now represented by several subbreeds of which the French-Alpine is one. It is a large, rangy, alert-looking goat. Its' markings are mixtures of fawn, black and white, and sometimes pure white or pure black. Alpines are noted for their milk production, giving a gallon a day as a rule. During a 305 day lactation, a purebred doe produced 2,191 kg of milk and 78 kg of butterfat.

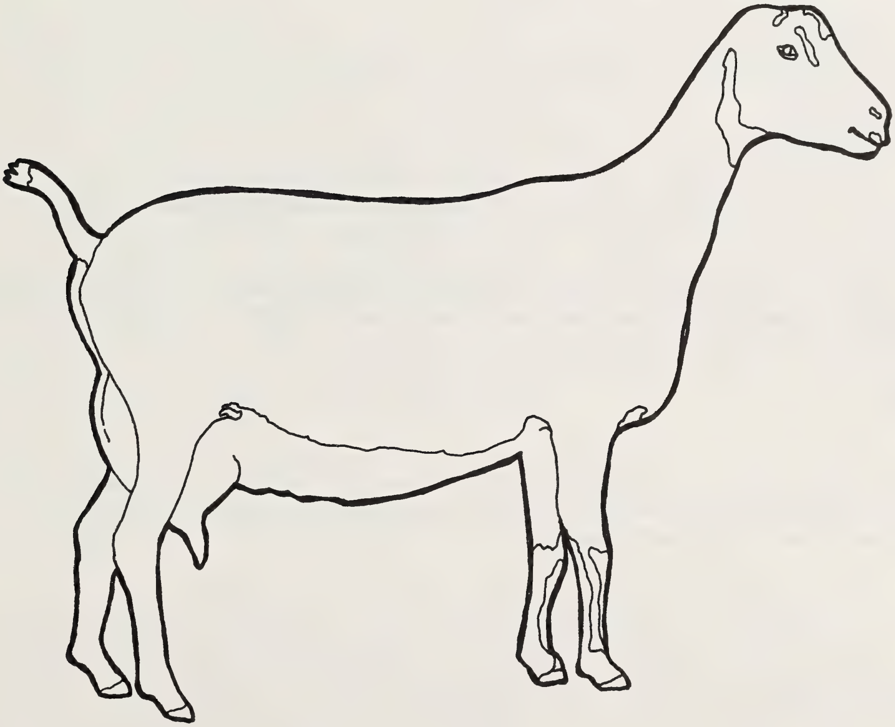
The American LaMancha

The American LaMancha is the most recently developed breed of Dairy Goat. They were developed from short-eared goats of Spanish origin, a type given the LaMancha name in France, but known as Monas, or Monkeys in Spain.

The American LaMancha was accepted by the American Milk Goat Registration Association in 1958 and by the Canadian Livestock Records in 1972.

The LaMancha has an excellent dairy temperament. She is generally calm, yet strong and hardy. She is a large dairy goat, who comes in any color. The American LaMancha's primary physical characteristic is the total absence of an outer ear.

The Standing Production Record for an American LaMancha is 1,480 kg of milk and 52 kg of butterfat in 305 days.



NUTRITION

FOODS AND THEIR USE

Animals require food for three main purposes, which are as follows:

1. to give heat and energy to the body
2. to provide essentials for building various body tissues
3. to supply materials for bone building

The term 'nutrient' is applied to any chemical compound or group of compounds of the same general chemical composition that aids in the support of animal life.

The primary food nutrients required by all animals are classified as Carbohydrates, Fats, and Proteins. Secondary food nutrient classes consist of Minerals and Vitamins. Other nutrients of much importance are Water and Air, but they are obtained primarily from sources other than feeds.

Definitions of these nutrients, their uses in the body and common feeds that contain them are given as follows:

CARBOHYDRATES:

These are complex substances that contain only carbon, hydrogen and oxygen - the latter two always in the same proportion as in water. Their use is to produce heat, energy and fat in the body of the animal.

Sources of carbohydrates are oats, barley, wheat, corn and molasses. Roughages such as silage and hay also contain this nutrient. Common carbohydrates are starch and sugar.

FATS:

These are also complex substances that contain only carbon, hydrogen and oxygen, but the proportions of carbon and hydrogen are much greater in fats than in carbohydrates. Fats furnish 2.25 times as much heat or energy per pound as do carbohydrates.

Any excess energy is stored as fat in the tissues.

Fat is found in small quantities in common grains such as oats, barley, and wheat, while Flax seed and Soybean seed are high in fat. Roughages are very low in fat content.

PROTEINS:

The proteins are also very complex compounds, containing carbon, hydrogen and oxygen and always the element 'nitrogen'. Most proteins also contain sulphur and some contain phosphorus.

Proteins are necessary for growth, development of glands, muscles, hide, horn, and hair. They are especially needed by the young growing animals for production of body tissues. The younger animal is growing at a greater rate than the older animal, thus the percentage of protein in his ration must be greater.

Protein is supplied in the legume hays (alfalfa, clover), linseed meal, milk, wheat bran, oats, and pasture grasses. The legume hays and all animal by-products are rich in protein.

MINERALS:

Four minerals of the greatest importance to the livestock feeder, are sodium and chlorine (combined in common salt), calcium and phosphorus. Other minerals utilized and likely to be lacking in certain localities are iron, cobalt, sulphur, and copper. Their need in the diet varies in certain districts.

The uses of minerals are many. They aid in the proper functioning of the body processes; the manufacturing of blood, digestion, muscle action and bone building. Minerals are stored in the skeleton and tissues.

Common salt is the chief source of sodium and chlorine and is usually fed in the familiar salt block. Iodized salt blocks contain iodine and are usually colored red. Blue colored blocks usually contain cobalt and iodine, while yellow colored blocks actually contain sulphur only.

Calcium and phosphorus are obtained from the legume hays and green forage and considerable phosphorus is obtained from cereal grains. Bone meal is a well-known source of these minerals. Limestone is a source of calcium. Monocalcium phosphate is a chemical containing both. Several commercial mineral supplements are available on the market containing calcium and phosphate along with iron, iodine, molasses, protein or high percentage of salt. It is recommended that locally formulated mixes be used as they are designed to meet local needs.

VITAMINS:

The vitamins are known as accessory food substances. They are identified by letters. Vitamins "A", "B" and "D" are the common ones required by the animal.

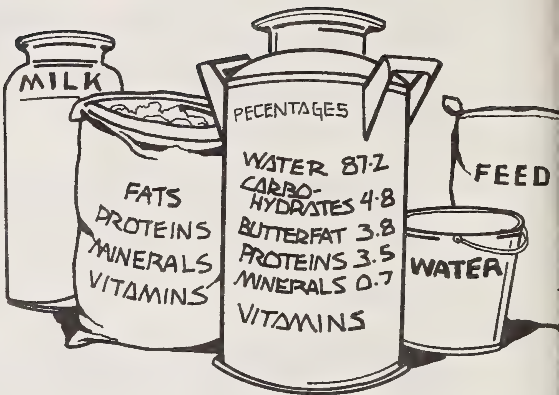
Vitamins find their use in the body as regulators of growth processes, assisting in digestion and helping in disease prevention.

Vitamin "A" promotes health and growth. It is found in green grass, carrots, milk, well-cured legume hay, yellow corn and cod liver oil.

Vitamin "D" is known as the "Sunshine Vitamin". Lack of it in the diet causes the bone disease known as Rickets. It is very important in the rations of the growing animals and more particularly during the winter months. Milk, grasses and green well-cured hays are good sources of the "D" vitamin.

WATER:

All vital processes of the body demand water. It is used in the digestive processes and in the removal of wastes from the body. It is an agent in governing the body temperature. Regulation of temperature is accomplished by the evaporation of sweat from the body surface and through vapor given off by the lungs.



USE OF NUTRIENTS IN THE BODY

The animal requires nutrients for the following purposes: maintenance, growth, production of milk, reproduction, fattening and work.

Maintenance

The animal must be kept warm, and must have energy for the work of eating and digesting food, for breathing, for the work of the heart, and for moving itself about. In addition, the tissues must be kept in repair, and nutrients are required for growth of hair and hide.

The principle requirements for maintenace are energy and heat producing nutrients. Maintenance takes first priority on the use of the feed. If fed below maintenance needs, the doe will use up her body reserves of fat and other nutrients, dropping off rapidly in milk production. Eventually, when these are used up, starvation or serious malnutrition sets in and her health is affected.

Maintenance requirements are approximately proportional to the animal's weight. The nutrients needed for maintenance will be about the same, whether the doe is dry or milking.

Growth

Growing animals require nutrients for the production of new tissues as the bones, muscles, and organs of the body increase in size. Growth requires an abundance of protein, minerals, vitamins, and energy.

Milk Production

The milking doe requires nutrients for manufacturing the milk she produces. Milk is high in protein, minerals, vitamins, and energy. Requirements, therefore, are very heavy for these nutrients. The milking doe also requires a great deal of water for her body needs and for milk production.

Milk of high butterfat content contains more nutrients than lower testing milk, and requires a larger quantity of nutrients for its production. Thus, most feeding guides are calculated for milk of various percentages of fat, and over a range of production.

Reproduction

The pregnant doe requires additional nutrients for the growth of the fetus (unborn kid), especially during the last two to three months of pregnancy. This is the period of most rapid growth of the unborn kid.

Fattening

The nutrients needed for fattening are those supplying energy. This will include carbohydrates, fats and any protein not needed for other purposes.

Work

Work requires energy and calls for the same nutrients as for fattening. We do not ordinarily use dairy animals for draft purposes, but when the goat is forced to climb over hilly, scanty pastures, or to walk long distances to and from the pasture, she may be using much of the energy she gets from her food for this work.

CLASSES OF FEEDS

Feeds can be classified into three main groups.

1. Concentrates 2. Dry Roughages 3. Succulent Feeds

1. Concentrate Feeds

The concentrate feeds include farm grains, mill feeds and manufactured supplements. They are feeds low in fibre and high in digestible nutrients. They are able to supply large quantities of energy for the animal to use quickly.

Some of the common concentrates are: oats, barley, wheat, wheat bran, shorts or middlings, corn, molasses, dried beet pulp, linseed meal, fish meal, pea meal, cottonseed meal and soybean meal.

Several manufactured feeds for dairy cattle are on the market. They are mainly composed of concentrates to which minerals have been added. They are two types:

1. Complete concentrate rations - 14 - 18% protein fed directly.
2. Supplementary Mixes - 24 - 35% protein to be mixed with home-grown grains.

A 14 or 16% dairy concentrate ration is suitable for feeding to goats.

2. Dry Roughage Feeds

The dry roughage feeds include such feeds as hay and straw. These are feeds which are high in fibre but low in digestible nutrients. Large quantities of such feeds would be needed to sustain animal life. The stomachs of goats are designed for the utilization of such feeds. They are part of all livestock diets but it has been proven that animals can be raised in good condition on concentrate feeds without the use of roughages.

Dry roughages used for goat feed include alfalfa and clover hays (rich in protein), mixed hay, timothy hay, meadow hay, and grain hay.

These hays differ considerably in the content of protein, carbohydrates, mineral fibre. In general, hay containing a high proportion of legumes is most suitable for dairy goat feeding. Early cut or immature grasses and legumes may contain as much as twice the nutrient percentage as late cut, mature plants.

3. Succulent Feeds

By succulent feeds we mean any feeds that are fed in the green or preserved stage - ensilage and green grass are examples.

Corn silage is one of the best roughages. It has a good effect on the digestive system of the animal. Corn silage can be used as a winter feed or to supplement the ration when summer pastures are scarce.

Green silage refers to that made from grass, legumes, green cereals or combinations of these. It is considerably higher in protein and slightly lower in carbohydrates than corn silage.

Green feed, both legume and grass is the most economical feed for livestock. It is highly nutritious and palatable feed that supplies a great many of the food elements necessary for health and growth.

CHARACTERISTICS OF FEEDS

The following discussion of the various feeds should aid the member in selecting those which will provide maximum production at the most economical prices.

CONCENTRATES - CEREAL GRAINS, BY-PRODUCTS

Barley - Barley is higher in digestible nutrients than oats. It is essentially an energy or fattening feed. When ground, barley is a heavy meal that should be mixed with other lighter, bulkier feeds. Ground or crushed barley is an excellent feed for dairy goats and may form up to 50% of the concentrate mixture.

Oats - Oats are one of the most popular stock feeds. Oats contain nearly as much protein as barley, but fewer total digestible nutrients (T.D.N.) than barley or wheat because they have a fibrous hull. In dairy rations, oats are very palatable and bulky. Oats should be ground to a medium fineness or crushed for dairy goats.

Wheat - Wheat is high in T.D.N. and often contains more protein than barley. Ground wheat is satisfactory feed for dairy goats. It may be fed regularly as part of a concentrated ration. When ground, wheat tends to make a heavy, pasty meal. The best results when feeding wheat are from concentrated rations containing 1/3 to 1/2 wheat.

Rye - Rye is a fattening feed also but has one serious fault. It is unpalatable to most animals and they will not eat it readily. One third rye is the maximum which should be fed to dairy goats.

Wheat Bran - Bran is removed from wheat in the milling of flour. Bran is widely used as a feed for goats. It is fairly high in protein, high in minerals and has a mild laxative effect. It is a favourable feed for dairy goats, for sick animals, for females at the time of kidding and for fattening kids. It is palatable and, because of its bulk nature, is very useful for mixing with heavier grains to lighten the ration.

Wheat Shorts and Middlings - These are by-products in the milling of wheat. They are slightly higher than bran in feed value. They have a heavier, finer character which reduced their feeding value for goats. Shorts for middlings are not generally recommended for goats. If obtainable at the same price as bran, they may be used in the meal mixture.

Dried Beet Pulp - Beet pulp is the residue left after the syrup is extracted from sugar beets. It is a bulky feed, low in protein, and has a laxative effect on the animal. It is widely used by dairymen. Many consider it more a high-class roughage than as a concentrate.

Dried Brewer's Grains - A by-product resulting from the manufacturing of malt liquors from barley. They are rich in protein, high in fibre content and contain comparatively little carbohydrates. This feed is palatable and, because of its bulk, may be used to lighten up a heavy meal mixture. In feeding value, dried brewers' grains are similar to bran.

Molasses - There are two kinds of molasses; one is a by-product of the beet sugar industry and the other is a by-product of cane sugar manufacture. There are slight differences but for practical purposes they may be considered equal. They contain about the same T.D.N. as medium quality oats. Both types are very low in protein and phosphorus. Molasses is one of the most palatable feeds for goats. The best way to feed molasses is thinned with hot water and sprinkled over dry roughages.

Linseed Oilmeal - (Oilcake meal) - This is the residue left over after the oil is extracted from flax seed. It is rich in protein and is widely used to boost the protein content of a ration. Linseed oil meal is very palatable and has a laxative effect on the animal. It is suitable for goats of all ages.

Soybean Oilmeal - A by-product after the oil has been removed from soybeans. This feed is high in protein and mineral material and is very palatable. This product is the most popular plant protein supplement used by feed manufacturers.

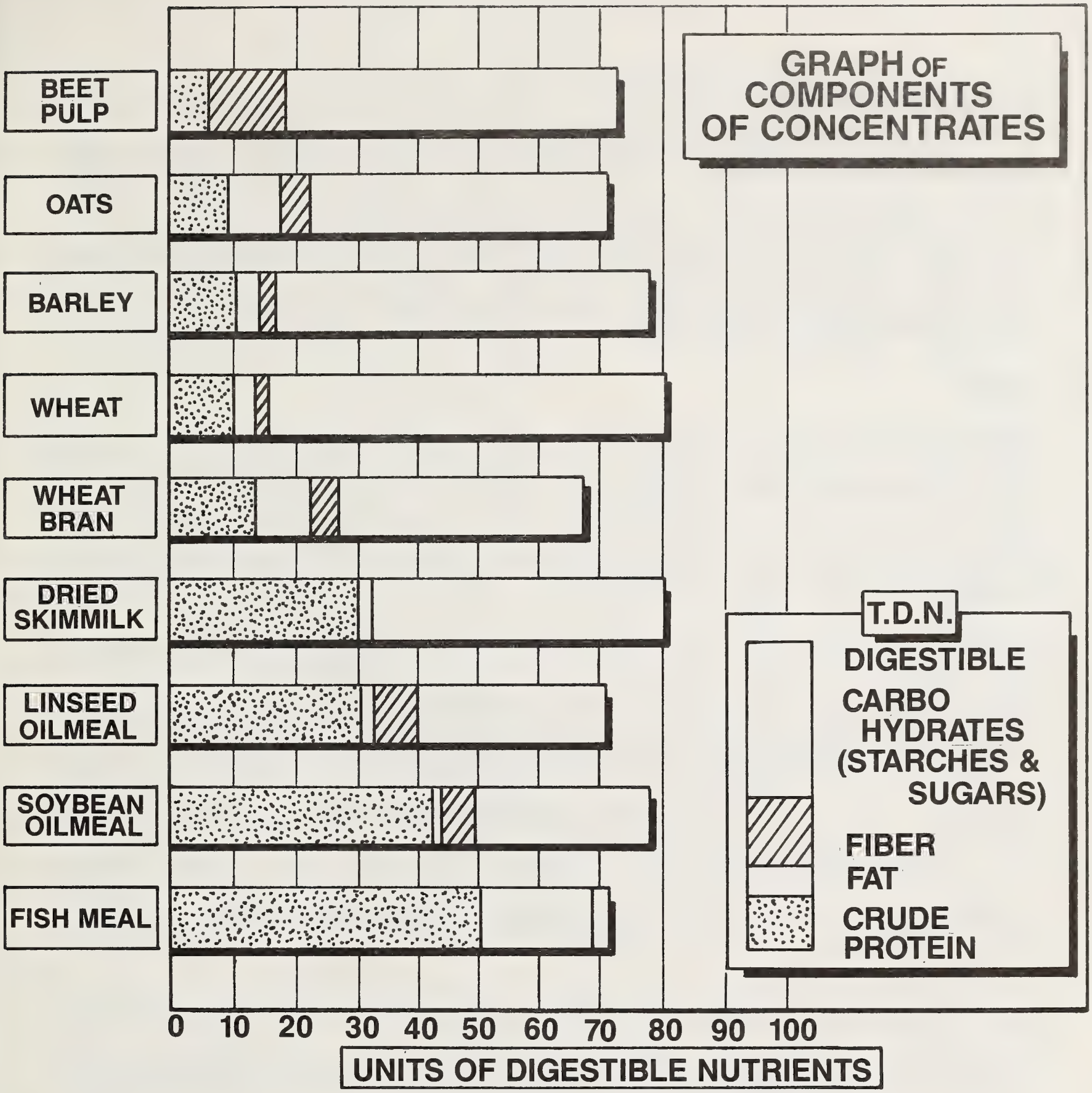
Rapeseed Meal - Rapeseed meal gives performance equal to other vegetable oilmeals. It is lower than soybean oilmeal in protein content. Avoid sudden introductions of Rapeseed meal because the difference in taste may cause reduction of feed intake. It is often available at a lower cost if produced locally.

Milk and Milk Products - Milk is often spoken of as nature's most nearly perfect food. It contains protein, minerals, fats, and vitamins necessary for good growth. Skim milk and milk by-products are excellent protein supplements for young kids. Skim milk has lost little except the fat. When skim milk is used, a calf meal should be fed to compensate for the low fat in skim milk.

Fish Meal - A high-protein product that is rapidly increasing in popularity. It contains 60 - 75% protein, depending on the type of fish used and the method of manufacture. It also contains over 10% mineral material. The oil content should be low in order to avoid rancidity. Fish meal is widely used by feed manufacturers as a protein source of rations.

Bone Meal - Bone meal is a by-product of the packing plants. It is simply bones which have been cooked and sterilized and then dried and ground. It is usually considered a mineral supplement but it does contain 25% crude protein. The chief minerals are calcium and phosphorus. It is widely used for all classes of farm animals. It can be mixed with the grain or mixed with salt and fed in a self-feeder.

The following graph may make it easier to visualize the nutrient content of the various concentrate feeds. When reading the graph, one must remember that the total digestible nutrients (T.D.N.) are composed of carbohydrates, fibre, fats and protein.



MANUFACTURED FEEDS

These are composed of a variety of concentrates to which minerals are usually added. There are two classes of manufactured mixed feeds:

(a) Complete rations - These usually run from 16 to 18% protein. These are ready to be fed directly to cattle.

(b) Supplement mixtures - These contain from 24 to 36% protein. These are mixed with home grown grains to provide a balanced ration.

Today most dairy herds are fed commercially prepared grain rations in a pelleted form.

Roughage Quality is Important

High quality roughages reduce the expensive concentrates required by supplying a great portion of the nutrients. They also supply most of the vitamins and minerals required. Green, leafy, early cut legume or mixed hay and green well-cured silage make good winter feeding for the dairy herd simple and economical. Poor roughages, such as straw or stemmy overripe grass hay, make better bedding than feed. So much energy is used up in eating and digesting this low grade roughage that very little is left for useful nourishment of the goat.

LEGUMES

Alfalfa - This legume is often called the king of forage crops. It is a high yielding perennial in many parts of the province. It is rich in protein and mineral matter. While it is quite drought resistant, it requires good moisture conditions for high yields. Adapted varieties are winter hardy, but winter killing may occur when cutting or grazing is done in August and September. It withstands only about one week of spring flooding.

Sweet Clover - Biennial legume that is seeded one year, produces a crop the next, and then dies out. It is a heavy yielder of good quality hay which is inclined to be coarse. It is better used as a pasture crop or a silage crop and as a soil builder. It is winter hardy and quite drought resistant. It will not stand much more than ten days of spring flooding.

Red Clover - It is a widely used legume in hay mixtures. Being a biennial, red clover produces the heaviest yield of forage the second year after planting, and then dies.

Alsike Clover - It is a short lived perennial and more persistant in hay mixtures than red clover. It thrives in wetter locations than other clovers.

White Clover - White clovers are either dwarf or tall types. White Dutch clover is dwarf and stands up well in a pasture mix. Ladino clover, a tall strain of white clover, is recommended for irrigated pasture and hay mixes.

Pea Hay - Made from pea vines following pea harvesting. Rich in protein and very palatable for dairy goats.

GRASSES

Slender Wheat Grass - A short-lived, fairly drought-resistant bunch grass. It produces good hay yields for 3 to 4 years and is useful in short rotations. It stands a fair amount of alkali and from 5 to 7 weeks of early spring flooding.

Intermediate Wheat Grass - A fairly long-lived, creeping rooted grass which is easy to establish. It grows tall and produces a high yield of hay and pasture. It survives up to two weeks of spring flooding.

Tall Wheat Grass - A fairly long-lived grass with a tall stemmy type of growth. This grass is best suited to saline and alkaline soils which have high water tables or are wet from seepage. It is lower in feeding value and palatability than some of the other grasses. It will stand up to five weeks of spring flooding.

Russian Wild Rye - A long-lived drought-resistant bunch grass. It produces a large amount of basal leaves and relatively few stems. It is strictly a pasture grass and not recommended for hay. Russian Wild Rye is highly palatable to livestock. It maintains a high protein content throughout the summer and fall, and hence is valuable for late summer and fall pasture. It has good ability to make regrowth.

Brome - It is a creeping rooted, long-lived and drought-resistant grass. The plants are leafy and tall. Brome is a good pasture and hay crop. The protein and mineral content of brome grass is much lower than alfalfa hay. Brome stands 4 to 6 weeks of early spring flooding.

Crested Wheat Grass - A bunch type, long-lived, hardy and drought-resistant grass. It is good spring and early summer pasture crop. It makes good hay if cut at heading time. Crested wheat grass gets tough and wiry if not cut at the proper stage. It withstands spring flooding for about one week.

Reed Canary - Reed canary is a long-lived creeping rooted perennial. The crop grows up to six feet tall and is leafy. While the stems are coarse the hay is relished by livestock. It withstands flooding for at least seven weeks and much longer, if the water is not deeper than two feet. It is only moderately resistant to alkali.

Orchard Grass - A perennial that resumes growth early in the spring. Suited to a wide range of soil and climate conditions, it is a very productive hay and pasture species. Combines well with red clover in a hay crop mixture.

Timothy - Difficult to establish, low in protein and not well liked by goats unless as a mixture containing large proportions of legumes.

Perennial Ryegrass - A bunch type grass that will establish very quickly. It is tolerant of wet conditions and will produce an abundance of spring pasture.

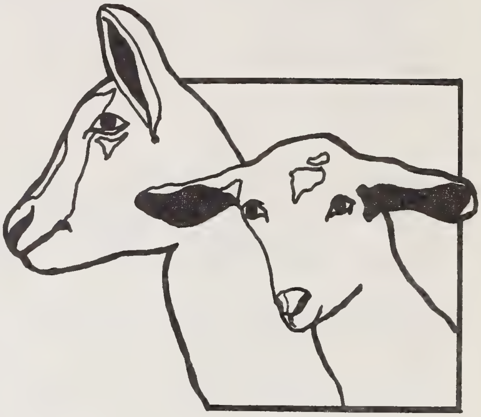
Oat Hay - This crop is usually used to supplement the supply of roughages from the hay crops in drier years. If put up properly, it is equal in feeding value to brome hay.

Straw - All types of straw are high in fibre and most is of little value as feed. Some straw may be used as part of the roughage, but the ration should be supplemented with protein.

RAISING A KID

Feeding

The first few weeks are very important ones in raising a kid. Proper care will get your kid off to a good start. You must prepare to feed your kid soon after she is born. Young animals make more economical gains in weight than older animals. For this reason, it pays to start goats properly and to keep them growing rapidly.



The feed for your young kid must provide:

1. Plenty of protein. Young kids require high protein feeds to allow rapid growth of body tissues. As they become older, less protein is required.

2. Protein of good quality. This means the kind of protein which is suited to the body needs of the animal. Milk provides the best possible kind of protein. When milk is fed, little thought need be given to the quality of protein the kid receives. If milk is not fed during the early period, the grain or concentrate ration should contain good quality protein.

3. Enough energy to permit normal growth. Kids also require energy to permit growth. Milk and grains are high in energy content. For this reason, they should be fed milk and started on a little grain each day.

4. Enough minerals. Young animals require large amounts of calcium and phosphorus to permit growth of bones and teeth. Milk supplies large amounts of calcium and phosphorus and other minerals.

5. Necessary vitamins. Kids fed whole milk usually receive ample vitamins. Skim milk lacks some of the vitamins. You must see that your goat gets these from other sources.

The kid should be left with the mother for not more than 12 hours. Allow the kid to suckle the mother after birth and from time to time up to 12 hours later but not more. Remove where the mother cannot see or hear the kid. If removed at birth she must be dried with clean rags and put in a box with straw, etc., to keep it warm.

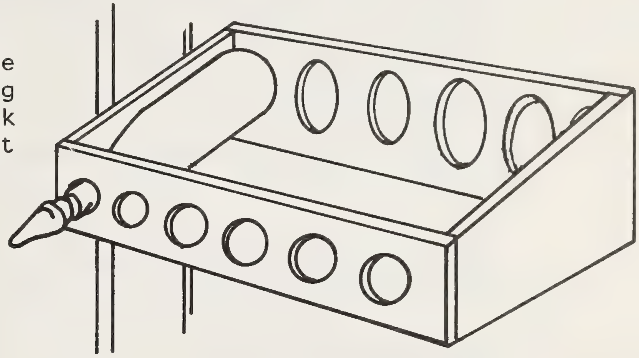
It is vital that the kid have the first milk or colostrum. This colostrum is most important as it contains certain vital elements necessary to promote the digestion of the young animal and prepare the delicate stomach for reception of the later milk.

Pan Feeding

In teaching to drink from a pan have a quite shallow dish or use a gravy strainer to prevent the kid burying its nose too deeply in the milk, again make the kid comfortable on your lap, a little trouble will be experienced in teaching to drink. If the kid refuses, miss a feeding.

Bottle Feeding

Many breeders prefer feeding kids from a bottle contending it is the more natural method as the action of sucking causes saliva to be mixed with the milk thus aiding digestion. Great care must be taken to clean bottles and teats used, they should be sterilized after each feed.



Framework for holding bottles

Suggested Feeding Schedule for Kids

1st week - Feed does' colostrum at body temperature, up to 1 kg milk/day, 3-4 times/day at regular intervals.

2nd - 4th week - Feed 1-1.75 kg milk/day, at body temperature at 2-3 times/day intervals. Have small amount of grain concentrate free choice in front of the kid.

5th - 8th week - 1.75-3 kg of milk/day depending on size. .25-.50 kg 14-16% grain concentrate/day. Good quality leafy grass - legume hay free choice.

9th week - Wean gradually from milk to warm water. Feed .5-1 kg 14-16% grain concentrate or grain - protein supplement mixture/day. Feed good quality grass - legume hay free choice to appetite.

The above feeding plan is offered only as a guideline. Members may need to adapt this schedule to fit individual goats. Grain and hay should be fed fresh daily.

Dehorning Dairy Goats

Dehorning is advisable because:

(a) It prevents injuries to other animals in the herd.
(b) Dehorned animals are safer to work with.
(c) Dehorned animals are not discriminated against in the show ring.

Electric dehorning is the recommended method of dehorning dairy goats, as it is the quickest and most sure way of getting a neat and completed dehorning.

The following procedure is recommended:

1) Start checking several days after birth for horns. If the skin moves freely over the horn bud the kid is hornless. If the skin is tight against the head, and if the horn button can be felt it is time to dehorn.

2) While the dehorning is heating (until it will burn a dark ring on a piece of wood quickly), clip the hair around the horn bud.

3) Restrain the kid as humanely as possible, keeping the ears out of the way.

4) Apply the dehorner for 15 - 20 seconds, using a firm even pressure and rotating and dehorner in place until you get a copper colored ring all around the horn bud.

Tattooing Dairy Goats

Success in securing a lasting tattoo mark depends entirely upon the operator. A few simple rules must be observed:

1) Halter or muzzle the animal if necessary.

2) Cleanse the area to be tattooed with carbon tetrachloride (Carbona) or alcohol to remove dirt, grease and wax.

3) Insert the correct symbols in the pliers and press the thin rubber sponge pad down very firmly over the needles. This pad helps to release the needles from the skin.

4) Check the correctness of the symbols by making a mark on a piece of paper.

5) Smear ink on the skin, choosing an area free from freckles and warts if possible. Place the symbols parallel to and between the veins of the tail web. The accidental piercing of a vein may spoil the tattoo. Green ink is much better for permanent tattoo identification - particularly where the tissue receiving the tattoo is black or very dark.

6) Make the imprint with a quick, firm movement and immediately apply more ink and rub vigorously and continuously for at least 15 seconds to insure penetration (an old toothbrush is excellent for working ink into the tattoo area).

DIRECTIONS FOR TATTOOING

All animals whose pedigrees are registered or recorded in the Grade, Canadian or Experimental & Crossbred Sections must be tattooed in both ears as follows:

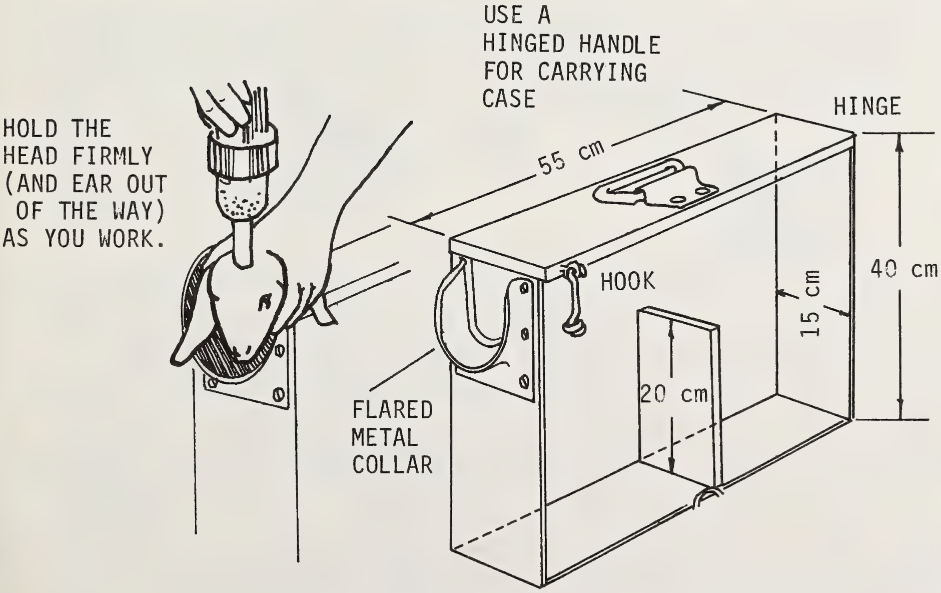
1) GRADES: In the right ear, the letters GR in addition to the letters which shall be assigned to each breeder. In the left ear, the herd number of the animal, followed by a designating year letter to signifiy the year of birth.

2) CANADIAN BREEDS: In the right ear, the letters CA in addition to the herd letters which shall be assigned to each breeder. In the left ear, the herd number of the animal, followed by a designating year letter to signify the year of birth.

3) EXPERIMENTAL & CROSSBREED: In the right ear, the letters XC in addition to the herd letters which shall be assigned to each breeder. In the left ear, the herd number of the animal, followed by a designating year letter to signify the year of birth.

Dehorning & Tattooing Box

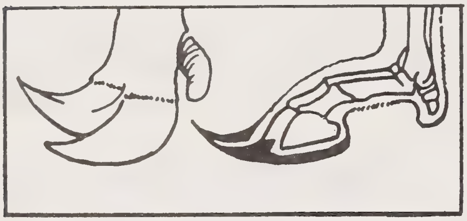
Members may wish to construct a dehorning and tattooing box as shown below. Kids can be easily held in such a box making dehorning and tattooing an easier job.


USE A HINGED HANDLE FOR CARRYING CASE
HINGE
HOLD THE HEAD FIRMLY (AND EAR OUT OF THE WAY) AS YOU WORK.
55 cm
40 cm
HOOK
15 cm
20 cm
FLARED METAL COLLAR

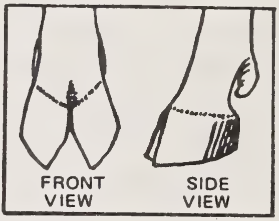
Care of the Feet

Be sure to check your goat's feet several weeks before any show day. If her toes are long, get someone to help trim them so she can walk gracefully and stand squarely. The diagram below shows how much better her feet will look when they are trimmed.

NEGLECTED HOOF AND RESULTING BONE STRUCTURE

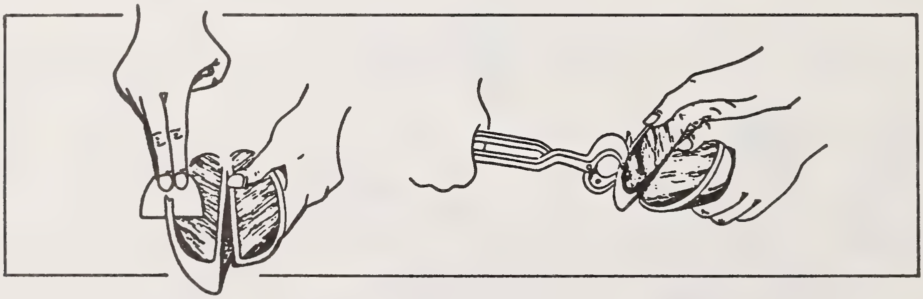


CORRECT SHAPE



A brokendown pastern

The foot at the left is too long. It should be trimmed. The foot at the right has been trimmed correctly. It permits the goat to stand and walk naturally.



Trimming the bottom of the foot with a wood chisel. The right side shows how it should look after trimming. (Right) Trimming the bottom of the foot with hoof nippers. The right side is trimmed correctly.

You can see from the illustration that the toes are shortened by cutting off the bottom of the foot rather than the end of the toes. Before you start trimming, mark the top of the toe so you will have a line to follow. Start trimming very shallow at her heel and cut a little deeper all the time until you get to the end of her toe. Do not cut too deep or it will make her lame. If you have to shorten her foot very much, it is better to trim her feet two or three times, several weeks apart.

You will need a pair of hoof nippers, a hoof rasp and a good knife. Shape the foot with the nipper, then rasp it smooth on the bottom. When you have this done, trim out the frog or center of her foot so her weight is on the outside of her foot.

THE GOAT HERD

SELECTING THE DOE

A good milking doe produces at least 4.0 kg a day. The doe should be selected with great care since an outstanding doe may be the nucleus of a very productive herd. Good body development is essential for good milk production. The doe should be well grown, healthy in appearance, and standing squarely on her feet, not down on the pasterns. The body should be wedge-shaped, sharp at the withers but with great spring and depth of rib denoting a capacity for consuming large amounts of food. The thighs should be thin, providing plenty of room for a round, well-attached udder of fair size.

The skin of the doe should be loose, pliable and free from dryness. Goats in proper condition have fine silky hair. In many cases, poor condition of flesh may be a clear indication of a good milker, while a poor milker may be found in good flesh. The neck should be thin and graceful, with or without wattles, and the head narrow. The eyes should be clear and bright. Does should be truly feminine in appearance and mild in temperament. Highly nervous goats are difficult to handle, milk, feed and manage, and may be upsetting to other members of the herd.

The milking potential of a doe cannot be estimated by size of udder. A large udder may give a very small amount of milk, especially if it is fleshy and lacking in quality. The udder of a good milk goat should be thin-skinned rather than meaty. The teats should be pointed slightly forward. When freshly milked, the udder should be soft to the touch and have a collapsed appearance.

BREEDING AGE

Milk goats reach their prime for milk production at about 4 years of age, but a goat possessing a strong constitution and continuing good health may be useful as a milker and breeder for about 10 years.

Young does should not be bred until 16 or 18 months of age, at which time they will have attained sufficient development. Kids born in March, April or May should not be bred until the second fall after their birth. Does will come in heat when quite young (under 6 months) and care should be taken to see that they do not mate before 10 months of age (12 - 14 months for Nubians).

Does will come in heat at all times of the year but the usual mating season is from August to March. The heat condition is characterized by uneasiness, pink and swollen genitals, constant shaking of the tail, and some extra bleating. The period of heat generally lasts from 1 to 2 days, and the period between heats varies from 15 to 21 days. Bucks are most sexual in the fall and winter months, and during this period, they emit a very strong odor which is offensive to some people. A young buck, 12 to 18 months of age, may be bred to 20 or 25 does; and a mature buck will breed from 40 to 50 does in a breeding season.

The gestation period, or the space of time between service and the birth of the young, ranges from 146 to 152 days. Goats are prolific; twins and triplets are fairly common whereas single births are the exception to the rule.

FEEDING

Feeds suitable for dairy cows are, in general, suitable for milking goats, except that goats prefer coarse ground or whole grains. A large proportion of succulent feed or beet pulp may be added to the ration, if available. To milk well, does must be fed well. Rations for does should have a protein content between 12 and 15 percent, depending on the amount of protein in their hay and on their milk production. Milking does should receive from .75 - 1.25 kg per day of concentrate, according to size, weight and milk production. Legume (alfalfa, clover) hay or mixed (legume/grass) hay may be fed to appetite. Succulent feeds (silage, roots or beet pulp) as added roughage at 1 - 1.25 kg a day, stimulate milk production. A concentrate ration consisting of 100 kg corn or barley, 100 kg oats, 50 kg wheat bran and 25 kg linseed oilmeal or soybean oilmeal should give results if fed according to daily milk production. A good rule of thumb is to feed 1 kg meal for each 3 kg of milk produced daily, and to provide a minimum of .75 kg daily for low producing does. The foregoing feed allowances will provide total digestive nutrient (T.D.N.) intake conforming satisfactorily with research findings for milking doe requirements. Should they go off their feed, an opportunity to browse the bark of brush sometimes helps to restore their appetite. Also, a dash of cider vinegar either on the feed or in the water has been found helpful.

A satisfactory ration for the milking doe is:

Clover or alfalfa hay	1 kg a day
Corn silage or roots	.75 kg a day
Concentrate mixture	.5 to 1 kg a day

An alternative ration where no silage or roots are available is:

Clover or alfalfa hay	1.25 kg a day
Concentrate mixture	.5 to 1 kg a day

When the does are on pasture, the concentrate mixture may be reduced a little. Grass, especially young grass, is an excellent feed and it replaces up to half the concentrate.

A good grain (or concentrate) mixture which contains 13.5 percent of digestible protein would be:

Crushed oats	75 kg	low protein
Cracked corn	75 kg	low protein
Wheat bran	25 kg	medium protein
Soybean oil meal	25 kg	very high protein
Salt	2 kg	

It is best to feed the does separately so that each doe gets her proper ration. The amount of concentrate should be increased according to the amount of milk given. One kg of concentrate should be fed for kilogram of milk given.

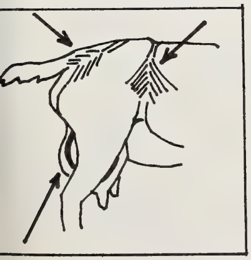
When the goats are dry, if they have access to good pasture and browse, they need no concentrate; if however, the pasture is poor or shows signs of drying, concentrate up to .5 kg per day should be fed. In winter dry does should be fed .5 kg of concentrate, from .5 to .75 kg of silage or roots, and all the hay they will consume. Goats are dainty feeders and the feed should be clean. They appreciate variety in the feed. It should hardly be necessary to add that goats need plenty of fresh water. They should not be allowed to drink from pools where the water has been standing.

KIDDING

When the date of kidding approaches, the doe should be placed in a roomy, clean well-bedded box stall and kept quiet. After kidding, the doe may be given a warm bran mash containing a small amount of rolled oatmeal and a pinch of salt. When the doe has eaten all that she requires it is wise to remove any mash that is left. After 48 hours, her ration may be made up of choice clover hay and a very small amount of concentrate, not more than .5-.75 kg of a mixture of two parts whole oats, one part wheat bran. Roots, cabbage, or beet pulp may then be added to the ration. Immediately following birth, it is advisable to swab the navel of the kids with tincture of iodine.

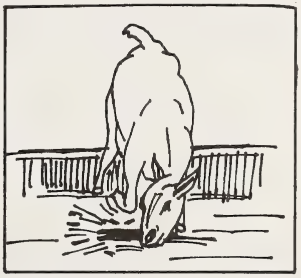
Signs of Approaching Parturition

NKEN AT TAIL AND HIP



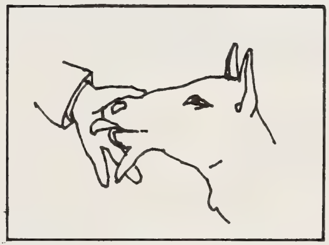
DDER HAS SHINY LOOK

LOOKING BACK AT SIDES AND TALKING



RESTLESS - PAWS BEDDING

HEAVY BREATHING WORRIED LOOK



GREAT DISPLAY OF AFFECTION FOR KEEPER

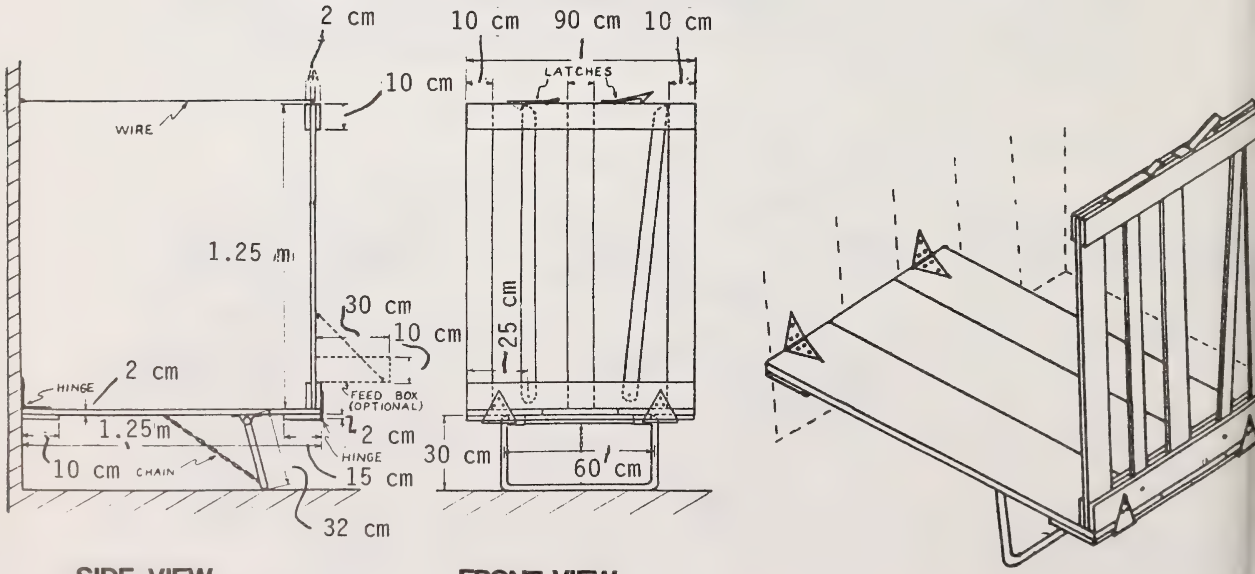
MILKING

The best way to milk a goat is to have a small stand, or bench, made, with a moveable wooden clamp for the goat's neck and small feed box. Goats soon become accustomed to being milked on a bench such as this, and the process of milking is much less tiring as there is no necessity for the milker to stoop. Goats should be milked twice a day at as near 12-hour intervals as possible. The secretion of milk takes place throughout the day and night, but it is slowed up by the accumulation of milk in the udder. Therefore milking at an even interval gives the best results. With very heavy milkers, it is advisable to milk three times a day at the height of lactation. Goats should be milked, whenever possible, in a room other than that in which they are kept, as this helps to keep dust and odors in the milk at a minimum.

The does may be milked either from the rear or from the side, but whatever method is adopted should be adhered to as a routine. The time of milking and of feeding, too, should be kept as invariable as possible so that the goats may be accustomed to a routine and know what to expect. It is wise, also, that these operations be done from day to day by the same person.

The doe's udder should be either washed or wiped thoroughly with a damp cloth before it is milked. The udder should be fairly dry before the milking begins. Any long hairs around the udder should be kept clipped. The first milk drawn should not be saved as it contains any foreign matter, such as dust or bacteria that may have found their way into the teat canal.

Two-Goat Milking Stand



SIDE VIEW

FRONT VIEW

The Herd Sire

Keep bucks apart from does to avoid tainting of the milk. This will also avoid exciting them when breeding is not desired. If at all possible, he should have his own house and have a wether as stable mate for company.

When keeping only a few goats, obtain the services of a good billy from a reliable breeder, when needed. Artificial insemination is being used more, and an inquiry at the nearest licensed artificial-insemination centre may result in the service the breeder requires.

During the winter months, the ration for bucks may consist of alfalfa, clover and mixed hay and some concentrate in the form of oats and wheat bran. Before and throughout the breeding season, a mature buck should receive a liberal ration of grain, up to one kg per day, about .25 kg more than he will receive at other times of the year. If he is out on good pasture during the non-breeding season, he need be given no grain. Bucks should not be kept together, especially during the breeding season, as they will fight and are likely to injure one another. Bucks are able to serve does all the year round.

The number of does a buck can breed depends upon his age and condition. A well-grown buck kid may breed five or six does during his first season. During the second season (when he is from 18 months to 2 years old), he may breed 25 to 30 does; and when he is mature, from 50 to 60 does. The maximum number is only possible if the services are well spaced.

The building used to shelter goats should be in a naturally well-drained area. It should be free of drafts, well insulated, and properly ventilated. Old buildings may be remodeled and made satisfactory. A lean-to may be built at minimum expense on the sheltered side of a building.

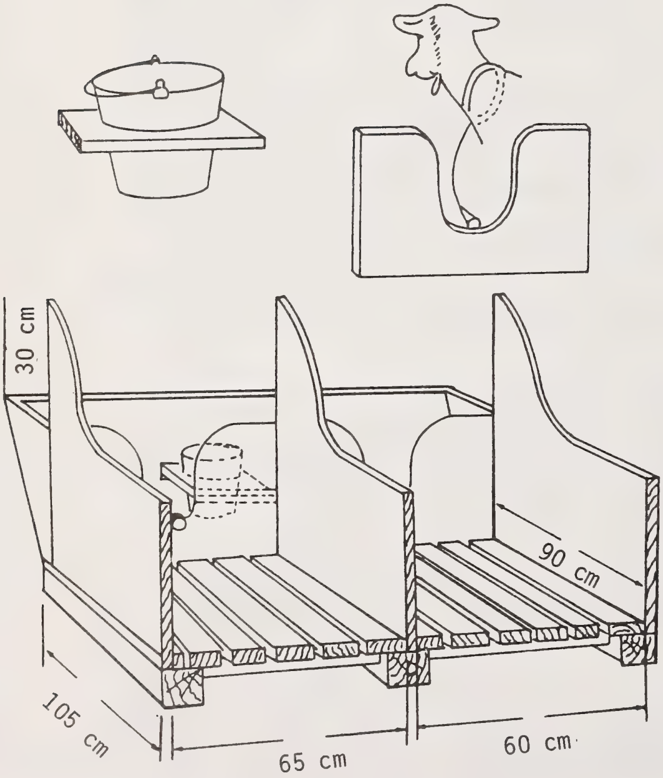
Whatever style is used, the building should be placed on a cement or concrete foundation; ventilated and of suitable size for the number of goats to be accommodated. Concrete makes the most satisfactory type of floor, and the surface should be well above the level of the ground outside. The floor of the stall should be sloped so that liquids may run off. The wall foundation should be fairly deep so that rodents will not burrow and undermine the floor. The wall construction may be wood studding with building paper and shiplap on the exterior, and matched lumber on the inside of the studs with insulation between. The ceiling may be lined and insulated with the same material used in the walls.

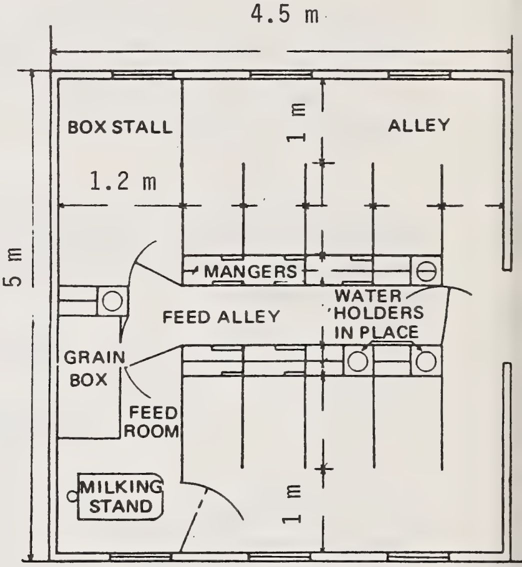
Windows should be on the south side of the building and hinged at the bottom to drop inwards from the top for ventilation. The opening at either side of the window, as it leans into the building, should be covered by a board fitted to the slope of the window, to prevent side drafts. With a hip roof, the attic may be used to store roughage and grain. There should be a trap door from stable to attic and a stationary ladder for access to the attic storage room.

Many breeders prefer community pens rather than individual stalls and group animals of about the same size or age together. For example, all milkers in one pen, yearlings in another, kids in yet another pen. This method saves a great deal of work and materials, and permits the herd billy to be confined separately.

The stalls should be equipped as shown below, with movable stall bottoms so that the floor may be washed and disinfected if necessary. A shelf with a circular hole may be built in the corner of the manger to hold a water pail or feed dish. For tying, a chain with swivel snap remains as a fixture in the stall and is snapped into the ring of the goat's collar.

Goat Tie Stalls





Floor plan for a goat barn

DISEASES

A. Diseases of Young Kids

One of the most difficult problems in raising young kids is preventing and controlling diseases. In recent years much has been learned about disease control. Many of the causes of previous losses can be controlled.

Much can be done to prevent disease by proper feeding, management, and housing. If, in spite of your best efforts, diseases still occur, then proper treatment is essential. The use of various antibiotics (drugs) has proven beneficial in the treatment of the various diseases. If your kid shows any signs of sickness, act quickly to separate it from the others. Begin treatment at once. See your veterinarian for advice or help if you do not know how to treat the kid.

1. Common Scours

The most frequent disease affecting young kids is common scours. This disease is costly because it greatly reduces the rate of growth of a kid and makes a kid more susceptible to other infections. Common scours usually occur during the first four weeks of a kid's life.

The first signs are: watery feces (manure), loss of appetite, temperature and roughness of hair coat. Later symptoms are loss of weight and dehydration (loss of water from the body tissues which cause the skin to lose its elasticity).

The most important cause of common scours is overfeeding. Using pails and equipment for feeding which are not spotlessly clean can cause scours. Feeding cold milk or milk replacer may also cause scours.

Treatment should begin promptly. The amount of milk should be cut in half and one or more feedings should be skipped. The use of antibiotics and drugs may be useful. The return to normal feeding should be made gradually. Antibiotics in the milk replacer and prestarter may be used to prevent scours.

2. Infectious Scours or White Scours

Another frequent cause of death is infectious scours. The symptoms are:

1. Very high body temperatures and weakness of muscles.
2. Loss of appetite and dull look.
3. Off coloured or yellowish white feces (manure).
4. Rapid loss of weight and dehydration of tissues.

Death of the kid usually occurs in one to three days.

This disease is caused by a highly infectious organism (Escherichion coli bacteria which spreads the disease rapidly from one animal to another). Sometimes this germ enters the kid through the naval cord. This is why it is important to disinfect the naval cord at birth. This disease is usually the result of poor management. Irregular feeding, lack of Vitamin A and D, and poorly ventilated, drafty, wet pens often lead to scours.

In most cases, this disease is so fast that treatment is of little use. The affected kid almost always dies. The solution to the problem is prevention.

Some rules to help prevent infectious scours are:

1. Clean and disinfect the stall in which the doe kids.
2. Be sure the kid get colostrum for the first two days of its life.
3. Feed the proper amounts of warm milk regularly (at the same time each day).
4. Dip the naval cord in tincture of iodine right after birth.
5. Put the kid in clean disinfected stalls or pens. Keep the pens clean and dry.
6. Sick kids must be separated from healthy ones and the pen cleaned and disinfected.

3. Pneumonia

Pneumonia is a common disease of goats. Pneumonia often occurs when kids are weakened by scours or some other disease.

Kids suffering from pneumonia often:

1. Show rapid and difficult breathing.
2. High temperatures (fever).
3. Coughing and gasping.
4. A dry, hot nose.
5. Loss of appetite, general weakness and dullness.

A kid which recovers from pneumonia is left in a weakened condition. It will not do as well as if it had not had pneumonia.

The most common cause of pneumonia is exposure to drafts and damp, wet quarters along with another disease which weakens the kid. Pneumonia is also caused by germs (viruses and bacteria). These germs can spread to other kids. Healthy, vigorus kids in good quarters do not usually get pneumonia.

The most important treatment of pneumonia is warm, dry quarters. The use of sulfonamides and antibiotics is often useful in cases of pneumonia. Before beginning treatment with antibiotics and drugs you should be sure you have the proper diagnosis.

B. Insect Pests

There are several insects which bother goats. We will consider only those likely to be a problem to your kid.

You must be careful using insecticides around dairy barns and herds. These chemicals can also kill humans and animals if improperly used. Some insecticides, when used on milking does, may find their way into the milk. This can result in rejection of all the milk. Read the label before buying insecticides and observe any special precautions for dairy barns. Follow directions on the label carefully. Younger members should check with Dad or older persons before using insecticides.

1. Houseflies

The housefly carries and spreads diseases of man and animals. Eggs and maggots are found in manure, garbage, and other decaying materials.

Sanitation (cleanliness) is very important in the control of these pests. Clean up breeding places in barns, feed yards and garbage dumps. Spray manure piles with Malathion. Spray the inside and outside of barns, sheds, etc. with Malathion, Ronnel or other insecticides. The chemicals listed under the section on control of hornflies may be applied to goats to help control flies and mosquitoes. Poison baits cords, space sprayers and household sprays are also very useful.

2. Lice

Lice often infect dairy goats and kids in the winter months. They bother the animal, suck blood and thus reduce milk yields and weight gains. Lousy animals get thin and may die. Lice begin to show up in the hide as dark patches where the hair is thin. Often the hair is rubbed off in patches.

For milking dairy goats, use only Rotenone, Carbaryl (Sevin) or Ciodrin 20EC as a wash or spray. Treatment of all goats for lice in the fall is best. For non-milking dairy goats other products you may use are Ciodrin or Rotanone. These are best applied as sprays to wet the skin. Only one treatment with Malathion or Co-Ral is required. The other chemicals should be applied twice.

C. Infectious Diseases of Goats

The following includes only some of those diseases you should be aware of now.

1. Foot Rot

Foot rot is fairly common. It is associated with bacteria (germs or infection) which attack the tissues of the foot. These bacteria are found in muddy sloughs, mudholes, and in muddy, poorly drained yards and pens.

It is first noticed as a lameness. The foot is tender and the animal shows a decided limp. The foot begins to swell above the hoof or between the claws. If left untreated, the foot and leg becomes greatly enlarged and the bones and hooves are permanently damaged.

Foot rot can be treated successfully using drugs to combat the infection. Sulfa drugs given by mouth are effective. Penicillin is highly effective, particularly if administered before the foot has broken open. The foot itself may be bathed in a warm creolin or copper sulphate (bluestone) solution.

If the foot rot is a herd problem fence off mud holes and drain muddy yards. Provide a foot bath of copper sulphate and place it by the barn door, or any place where goats must walk through it daily. Some people report successful control by feeding organic iodine mixed with salt and fed free choice.

2. Mastitis or Inflamation of the Udder

This condition may be due to injury and unsanitary surroundings. It is recognized by swollen, hot and reddish appearance of the udder. If the kids are nursing they should be weaned at once and the doe should be isolated. Treat with an antibiotic and keep the udder milked out. Massaging the udder with warm camphorated oil and applying cloths that have been soaked in hot water will assist in reducing the inflammation and maintaining circulation.

3. Ophthalmia

This is a form of infectious inflammation of the eyes. Bathe the eye with warm boiled water and, with an eye dropper, place 2 or 3 drops of argyrol in the eye. Keep the animal in a darkened pen.

4. Pox

This results in pustules on the udder, similar to cow pox. Nursing kids may easily become infected in the mouth and over the lips and nose. In hand milking, if the hands are not washed after milking a doe with pox, the infection may be carried to other milking does. The affected parts should be washed with warm water containing disinfectant, then dried and given an application of zinc ointment.

D. Feeding Problems

Many different feeding problems can arise when feeding dairy goats. There are a few common ones you should know about.

1. Bloat

Bloat is a digestive disturbance in goats. It is an excessive production and/or accumulation of gas in the rumen. It occurs most frequently when goats are turned on to legume pastures. Alfalfa and clovers will cause bloat, particularly when the pasture is wet. Unfortunately, the actual reason why legume pasture will cause bloat is not completely known.

2. Indigestion

Goats frequently suffer from indigestion. The rumen ceases to function properly, loses its muscular movement and the animal is no longer able to eat and digest its food.

There are many contributing causes. Often an animal swallows nails or other small objects which cause irritation in the rumen. Overeating of grains or dry heavy roughage, sudden changes of feed or the feeding of spoiled or damaged hay will all cause indigestion.

In mild cases there is loss of appetite and scanty bowel movements. The animal is dull, stop chewing its cud and milk production is greatly reduced. In some severe cases the animal is greatly depressed, unable to stand, the legs and feet are cold and death soon follows.

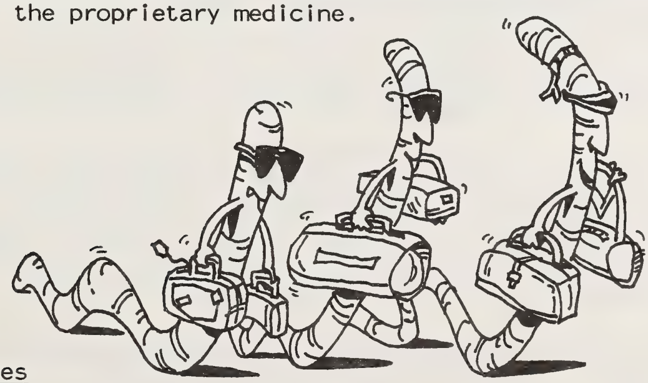
It is impossible to treat adequately without knowing the cause. Simple indigestion is usually cured by a laxative of .5 - 1 L of raw linseed oil. Tartar emetic, given at a rate of a 5 mL in 25 L of warm water every few hours for 16 hours may help.

E. Common Ailments

1. Internal Parasites

Goats infected by internal parasites appear rundown and anemic. The hair may be harsh and dry to the touch. Medicines containing thiabenzol have proven safest and most effective to date. These are safe enough to use on pregnant does and are so effective that one dose yearly is sufficient. Follow package instructions.

Tapeworms may be expelled by copper sulphate or lead arsenate preparations. Use as directed by your veterinarian or follow instructions on the label of the proprietary medicine.



Please
Worm
Me !!

2. Abscesses

Swelling caused by pus, most often found on the skin, udder or jaw, are the result of infection. When a soft spot or head appears, cleanse the area well with disinfectant and then puncture with a sharp knife that has been well sterilized. Press out the pus into a container and cleanse the interior of the abscess with disinfectant. Repeat daily as required.

3. Colic

A goat suffering from colic will roll on the ground or stretch its body while uttering sharp cries of pain. Keep the goat warm and quiet. Give warm linseed oil or mineral oil, one half cup for a mature animal down to two teaspoonfuls for a kid.

F. Prevention of Disease

"A gram of prevention is worth a kg of cure." The truth of this old saying applies in the care of animals as well as in other things. Attention to the following points will go a long way towards reducing the likelihood of disease and minor troubles:

1. Cleanliness of barn and yard.
2. Quality of feed, feeding methods and water supply.
3. Details of care and management.
4. Isolation of sick animals.
5. Disinfecting stable after disease has occurred.
6. Care in the disposal of dead animals.
7. Use of vaccines in preventing certain diseases.

Cleanliness of Barn and Yard

Remove manure from the barn slightly. Do not allow filth to accumulate in the stable and become a breeding place for insects and disease. Scrape or sweep the walls and ceilings once or twice a year and follow with a good coat of whitewash.

Keep the yard graded up so the water will drain away quickly. Scrape up accumulated manure and take it to the field frequently.

Quality of Feed, Feeding Methods and Water Supply

Avoid mouldy and damaged feed. Mouldy hay or grain is sometimes fed for a time without apparent injury, but serious trouble may result at any time from these causes and every effort should be made to avoid them.

Always avoid sudden changes to feed. This applies not only to stable feeding but to the change from stable feeding to pasture and the change from an ordinary pasture to one containing a luxuriant growth of clover. Such changes should be made by degrees. Disastrous results may follow from animals gorging themselves with damp clover, and other green feeds when unaccustomed to them.

A supply of good, clean water should be provided for the animals. Avoid stagnant pools, streams and wells contaminated with barnyard seepage as sources of drinking water.

JUDGING

JUDGING DAIRY GOATS

GENERAL: Appearance to be feminine and alert. Coat to be fine and short. Hide loose and pliable.

1. Head: feminine, moderately wide tapering to a strong muzzle. Front teeth should meet the pad of upper jaw.

2. Eyes: Rather large, clear and bright.

3. Throat: Fine. With or without wattles (fleshy appendage).

4. Neck: Long and slim, not coarse.

5. Withers: Neat and sharp, shoulders fine, blending smoothly into the body.

6. Backline: Long and showing strength. Slightly arched.

7. Fore-legs: Strong, straight, set well apart.

8. Pasterns: Upright, medium length, springy.

9. Hooves: Well-shaped, trimmed level.

10. Teats: Just large enough to grasp comfortably, symetrical, tapering, pointed slightly forward.

11. Udder: Globular, capacious, attached over a wide area, free from fleshiness, flexible and fine of texture. Well attached forward, with no cavity between halves. Spherical at rear, attached high and broadly, not pendulous. Halves symetrical, smoothly joined.

12. Milk veins: Preferred prominent and tortuous (many twists and turns).

13. Barrel: Large, capacious, held up firmly.

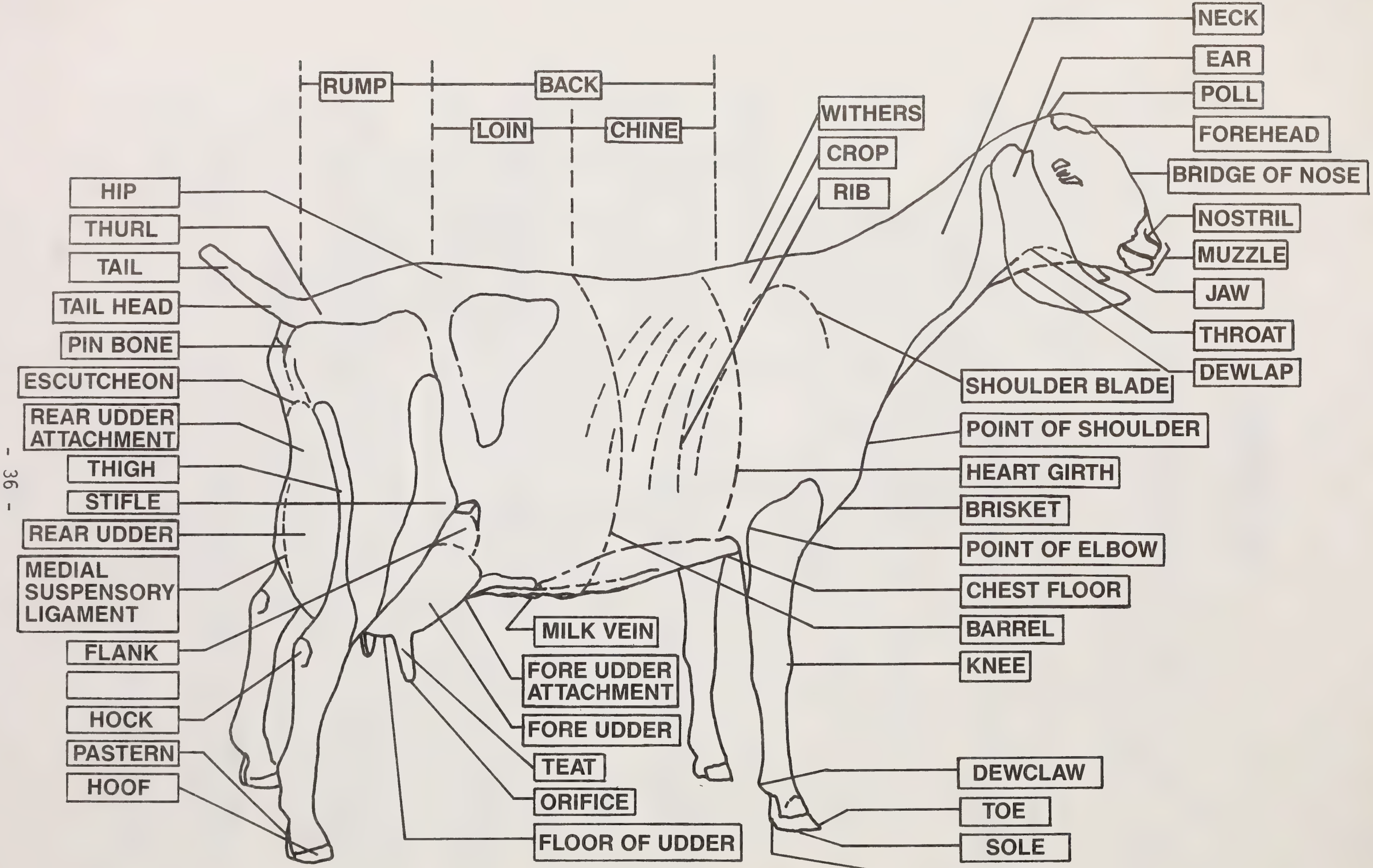
14. Chest: Fairly deep, good width between shoulders, providing good lung capacity.

15. Pelvic Structure: Broad, good width between pin bones.

16. Rump: Broad and long with moderate slope.

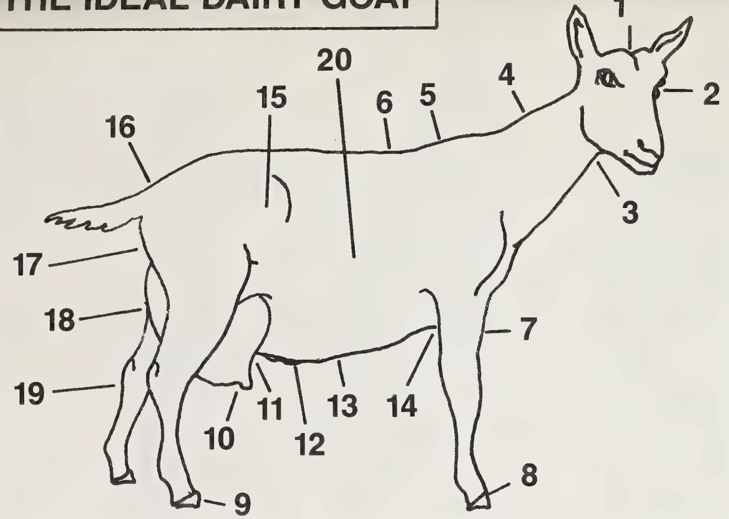
17. Escutcheon: Wide and reaching high.

18. Rear of udder: Halves blended to globular shape, extending slightly beyond the hind legs.

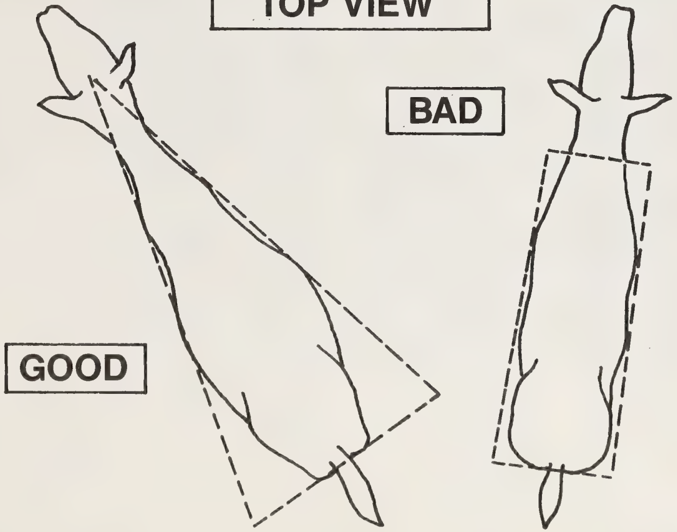


PARTS OF A DAIRY GOAT

THE IDEAL DAIRY GOAT



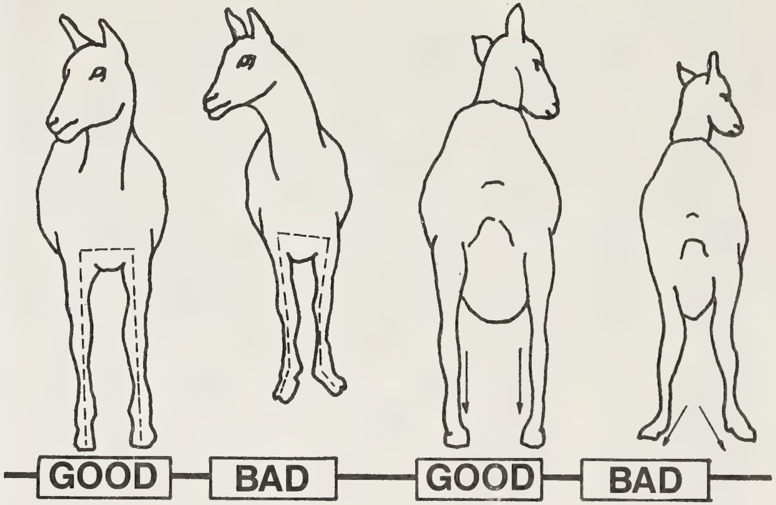
TOP VIEW

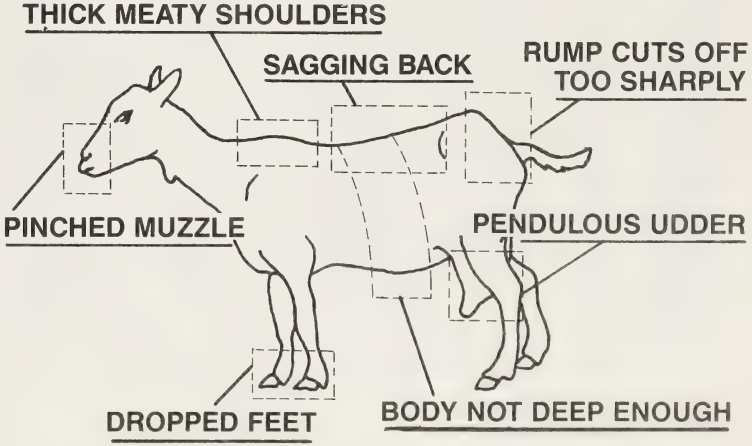


GOOD AND BAD CONFORMATIONS

FRONT VIEW

BACK VIEW





19. Hind leg structure: Good width between legs, hocks slightly curved to give ample room for udder. No tendency to being cowhocked. Legs strong, well up on pasterns.

20. Rib cage: Deep and well sprung, with a good shape between ribs.

EVALUATION OF DEFECTS

A. HEAD

1. Large scurs or stubs - moderate fault
2. Natural horns - serious fault (nearly disbudded or dehorned - no discrimination)
3. Crooked face - moderate to serious fault depending on degree
4. Undershot or overshot jaw - minor to serious fault depending on degree.

B. FORE BODY CONFORMATION

1. Loose, winged, or heavy shoulders - moderate to serious fault
2. Narrow chest or pinched heartgirth - moderate to serious fault

C. GENERAL BODY CONFORMATION

1. Short, shallow, or narrow body - moderate to serious fault
2. Low-backed or steep-rumped - moderate to serious fault
3. Broken or wry-tail - slight fault

D. LEGS AND FEET

1. Enlarged knees, non-disabling lameness, turned out or crooked feet - all moderate faults
2. Small-boned for body size, bowed over front legs, buck kneed, hind legs close together, or spring pasterns - all moderate to serious faults depending on degree (More serious in bucks)
3. Very crooked or malformed feet and very strong cow-hocks - all serious faults.

E. MAMMARY SYSTEM

1. Front, rear or side udder attachments lacking; pendulous udder; bagged too tight to feel udder texture; large or leaking orifice; an extra teat that has been cut off; double orifice in teat; teats not clearly separated from udder; udder hard or swollen (except in does just fresh); an udder so uneven that one half is less than ½ the size of the other - all these are serious faults.
2. Udder that is lacking in size and capacity in relation to size of doe - very serious fault.
3. Separation between halves or presence of scar tissue - slight to serious fault depending on degree.
4. Large pocket or beefy texture - moderate fault.
5. Teats set close together, bulbous, very small, or large, pointed sideways, uneven in size, having small streams or otherwise hard to milk, and extra teats are all moderate faults.

DAIRY GOAT SCORE CARD

(Ideals of type and breed characteristics must be considered in using this card)

Based on Order of Observation:

1. GENERAL APPEARANCE: Attractive individuality revealing 30
vigor; femininity with a harmonious blending and correlation of parts; impressive style and attractive carriage; graceful walk.
Breed Characteristics 10
Head - medium in length, clean-cut, broad muzzle with large, open nostrils; lean, strong jaw; full bright eyes; forehead broad between the eyes; ears medium size; alertly carried (except Nubians).
Shoulder Blades - set smoothly against the chest wall and withers, forming neat junction with the body.
Back - strong and appearing straight with vertebrae well
defined. 8
Loin - broad, strong and nearly level
Rump - long, wide and nearly level
    Hips - wide, level with back
    Thurls - wide apart
    Pin Bones - wide apart, lower than hips, well defined
    Tail Head - slightly above and neatly set between pin bones
    Tail - symmetrical with body
Legs - wide apart, squarely set, clean-cut and strong with forelegs straight
    Hind Legs - nearly perpendicular from hock to pastern. When viewed from behind, legs wide
    apart and nearly straight. Bone flat and flinty; 12
    tendons well defined. Pasterns of medium length strong and springy. Hock cleanly moulded.
Feet - short and straight, with deep heel and level sole

2. DAIRY CHARACTER: Animation, angularity, general open 20
ness and freedom from excess tissue, giving due regard to period of lactation.
Neck - long and lean, blending smoothly into shoulders and brisket, clean-cut throat.
Withers - well defined and wedge-shaped with the dorsal
process of the vertebrae rising slightly above the 20
shoulder blades
Ribs - wide apart; rib bone wide, flat and long
Flank - deep, arched and refined
Thighs - incurving to flat from the side; apart when viewed from the rear, providing sufficient room for the udder and its attachments
Skin - fine textured, loose and pliable. Hair fine.

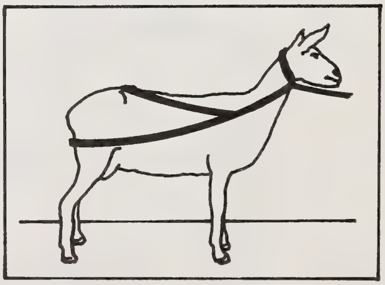
DAIRY GOAT SCORE CARD (cont'd)

3. BODY CAPACITY: Relatively large in proportion to the size of the animal, providing ample digestive capacity, strength and vigor.	12
Barrel - deep, strongly supported; ribs wide apart and well sprung, depth and width tending to increase toward rear of barrel.	
Heart girth - large, resulting from long, well-sprung foreribs; wide chest floor between the front legs and fullness at the point of elbow.	8
4. MAMMARY SYSTEM: A roomy, strongly attached, well-carried udder of good quality, indicating heavy production and a long period of usefulness.	
Udder - Capacity and Shape - long, wide and capacious; extended well forward; strongly attached.	10
Rear attachment - high and wide. Halves evenly balanced and symmetrical.	5
Fore attachment - carried well forward, tightly attached without pocket, blending smoothly into body.	6
Texture - soft, pliable and elastic; free of scar tissue; well collapsed after milking.	5
Teats - uniform, of convenient length and size, cylindrical in shape, free from obstructions, well apart, squarely and properly placed, easy to milk.	4
TOTAL	100

SHOWMANSHIP

An animal that will lead properly has a decided advantage over one that will not lead. It is especially important in the show ring and equally valuable when showing to a buyer or to someone who is "just lookin'". This idea is the same as used in breaking foals to lead.

A piece of sash cord or other small diameter rope is used. Make a stationary loop at one end. This loop should be large enough so that the knot should come about to the shoulders; the loop to go over the animal's quarters above the hock and lay on the side from which the leading is done. The free end should run through the collar or halter. Then attach regular lead. Start leading in a circle using regular lead. If the animal hangs back or sulks, a couple of jerky pulls on the rump lead rope generally starts it. Keep rump lead rope slack when the animal leads freely.



After a few turns around, reverse your direction. Teach your animal to lead from either side. This procedure may be used on mature animals, does, or bucks, yearlings or kids. A few minutes a day for about a week should be sufficient. Some animals will lead nicely with a lead rope attached to the collar, but will balk when being led by the collar alone without the lead attached. This lead works well in such cases. Just remember to do all leading with regular lead or hand on the collar. Use pressure on the rump lead rope only when necessary.

CLIPPING DAIRY GOATS FOR ACHIEVEMENT DAY

EQUIPMENT: Electric clippers, large and small, brush, blunt pointed scissors, staunchion or low platform.

GENERAL DIRECTIONS: Always clip from rear of dairy goat toward the head and neck. Clip up toward the tail and pin bone. Clip against the hair. Use smooth even strokes with the clippers. Try not to pinch or nip the dairy goat while clipping. Do one side at a time. Use care when clipping around the milk veins on stomach and around or near eyes.

1. Start on rear leg, at the hocks or below. Clip up toward the tail and pin bone. Clip the underside of the leg as well as outside.

2. Clip forward over the rump, hipbone and forward along the back.

3. Clip forward and upwards against the hair on the flank and barrel.

4. Clip past the heart girth and over the shoulders.

5. Clip belly and underside of dairy goat.

6. Clip frontleg, starting low as possible, underside as well as outside.

7. Clip between front legs on chest.

8. Clip neck, working up towards throat and jaw. Clip under chin and along jaw if dairy goat will permit.

9. With small clippers, clip udder.

10. With scissors, trim long hairs in ears.

11. Trim tail last, leaving brush-like effect on tip.

12. Brush gently with the hair to smooth coat and remove any loose particles of dry skin for finishing touch.

    Check hooves at this time and trim if necessary.

RULES FOR GOOD SHOWMANSHIP

1. Plan and prepare your animals, your equipment and yourself for the show well ahead of show date.

2. Fill out your entry list carefully and accurately, and send it to the proper place on the date as specified.

3. It is usually well to display an attractive, medium sized sign above your stall area identifying the breed, and the name and address of the owner.

4. Always plan to handle and exhibit your animals with gentleness, dignity, and pride, whether they are in or out of the show ring.

5. Each exhibitor should provide all the necessary feed and equipment needed for his stock.

6. Make every effort to keep your stalls and isles clean, neat and attractive at all times.

7. Water and feed all of your animals in your private pails and boxes only.

8. Provide proper tattoos, identification, and registration certificates for each animal.

9. Inform yourself fully with the rules of the above and endeavour to follow them completely.

10. Give the show officials your undivided attention and cooperate with them to the very best of your ability.

11. On show day your best efforts and considerations will help to make it a better show.

12. Before any animal enters the show ring they should be clean and well groomed, and they should have properly trimmed hoofs.

13. You should exhibit the animals in the show ring to the judge gently and gracefully, but without unnecessary, conspicuous gestures on your part.

14. Bring your animals into the show ring promptly. Follow the show carefully, and make it your business, as an exhibitor, to bring the proper animals into the ring for the right class.

15. Try to help your animal show at its very best in manner, general appearance, and type as it stands before the judge.

16. Make it a practice to be courteous at all times to the officials and to all other competing showmen.

RULES FOR GOOD SHOWMANSHIP (continued)

17. Be prepared to give prompt and accurate answers to the officials in the show ring about your animals. Have registration papers quickly available if requested.

18. Always know the whereabouts of the judge and have your animal in its best possible posture when the judge looks in your direction.

19. Always keep your animal between you and the judge so that your body will not obstruct the view of the judge.

20. Keep the animal standing well on four legs, one under each corner. With some practice this can usually be accomplished by properly maneuvering the animal with the neck chain or a slight backward pressure on the goat's chest area with your hand.

21. As the judge instructs an exhibitor to move his animal up in the class to a certain position, the exhibitors below should all move down one position to give proper space nearer the top of the class.

22. Do not talk to the judge in the show ring unless he or she requests some information about your animal.

23. Show your animal with a silent pride and confident attitude. Deep within your own heart you are trying to impress the judge with your animal.

24. Be a considerate and courteous showman and never allow your animal or yourself to keep a competitor's animal from showing at its very best before the judge.

25. Try to be a humble but pleased winner or a graceful loser. Be prepared to accept the final decision of the judge.

26. It is always good for winners of the runner-up honors to offer congratulations to the first place winner, especially in the championship classes.

27. After a class has been judged the exhibitors should not change positions or leave the ring until awards have been presented and records completed. Retirement from the ring should take place in the order of the placings in the class.

DAIRY GOAT SHOWMANSHIP CARD

Based on Usual Order of Consideration

1. APPEARANCE OF ANIMAL: 40
Condition and Thriftiness - showing normal growth - neither too fat nor too thin. 10
Hair - clean and properly groomed.

DAIRY GOAT SHOWMANSHIP CARD (cont'd)

Hoofs - trimmed and shaped to enable animal to walk and stand naturally. Neatly disbudded of animal is not naturally hornless.	10	
Clipping - entire body if weather has permitted, showing allowance to get a neat coat of hair by show time; neatly trimmed tail and ears.	10	
Cleanliness - as shown by a clean body as free from stains as possible, with special attention to legs, feet, tail area, nose and ears.	10	
2. APPEARANCE OF EXHIBITOR:		10
Clothes and person neat and clean - white costume, preferred, but not necessary.	10	
3. SHOWING ANIMAL IN THE RING:		50
Leading - enter, leading animal at normal walk around ring in a clockwise direction, walking on the left side, holding the collar with right hand. Exhibitor should walk as normally and inconspicuously as possible. Goat should lead readily and respond quickly. Lead equipment should consist of a collar or small link chain, properly fitted. As the judge studies the animal, the preferred method of leading is to walk alongside on the side away from the judge. Lead slowly with animal's head held high enough for impressive style, attractive carriage, and graceful walk.	10	
Pose and Show an animal so it is between the exhibitor and the judge as much as possible. Avoid exaggerated positions, such as crossing behind the goat. Stand where both judge and animal may be observed. Pose animal with front feet squarely beneath and hind feet slightly spread. Where possible, face animal upgrade with her front feet on a slight incline. Neither crowd other exhibitors nor leave too much space when leading into a side-by-side position. When judge changes placing, lead animal forward out of line, down or up to the place directed, then back through the line, finally making a U-turn to get into position. To step animal ahead - use slight pull on collar. If the animal steps badly out of place, return her to position by leading her forward and making a circle back through your position in line. When judge is observing the animal, if she moves out of position, replace her as quickly and inconspicuously as possible. Be natural. Overshowing, undue fussing and maneuvering are objectionable.	15	

DAIRY GOAT SHOWMANSHIP CARD (cond't)

Show animal to best advantage, recognizing the conformation faults of the animal you are leading and striving to help overcome them.	15
Poise, alertness and courteous attitude are all desired in the show ring. Showmen should keep an eye on their animals and be aware of the position of the judge at all times - but should not stare at the judge. Persons or things outside the ring should not distract the attention of the showmen. Respond rapidly to request from judges or officials and be courteous and sportsmanlike at all times, respecting the rights of other exhibitors. The best showmen will show the animals at all times - not themselves - and will continue exhibiting well until the entire class has been placed, the judge has given his reason and he has dismissed the class.	10
TOTAL	100

GLOSSARY

Antibiotic - Substance that prevents or controls infection.

Artificial Insemination - The process of collecting semen from the male and depositing it in the reproductive tract of the female by mechanical means.

Balanced Ration - A ration which supplies the necessary nutrients - protein, carbohydrates, fat, minerals, vitamins, and water in proportion to properly nourish the animal.

Breed - A race or special case domestic goats which reproduce distinctive characteristics.

Buck - Male of the goat species.

Chevon - The meat of a butchered goat.

Closebreeding - A form of inbreeding to the extent of mating closely related animals, e.g. dam to son.

Colostrum - First milk produced by a fresh goat (period 2-3 days).

Concentrate - Feeds low in fibre and supplying large amounts of digestible nutrients, e.g. cereal grains, oil meals.

Crossbred - Offspring produced by the mating of two different breeds.

Dam - The mother of an offspring.

Digestible Crude Protein - Portion of the total protein in a feed that can be digested by the animal (D.C.P.)

Doe - Female of the Goat Species.

Estrus Cycle - The reoccuring 15-21 day reproductive cycle of a doe from the time she is ready to be bred until she will be bred again if conception does not occur.

Fertile - The stage of development of the female animal at which conception will occur.

Gestation Period - The period from conception (uniting of the egg sperm) until birth of the offspring - approximately 146-152 days in goats.

Grade - An animal not eligible for registration although its parents may be "purebred".

Heredity - The transfer of characteristics from one generation to another.

Inbreeding - The mating of closely related animals and includes closebreeding and linebreeding.

Kid - A young goat.

Lactation - The period of time from which a doe freshens until she is dried off prior to kidding again.

Linebreeding - A form of inbreeding but to only a minor degree, e.g. cousin to cousin mating.

"Nick" - Term used to describe a mating which produces offspring that are superior to either parent.

Outcross - Mating of purebred animals that are not related within a breed.

Palatability - The degree to which an animal will eat a feed depending if it is pleasant to the taste, smell, and feel.

Parasite - Internal or external organism which lives in and on the host animal at whose expense it obtains food and shelter.

Pedigree - A record of the male and female ancestors showing name, date of birth, and production figures.

Protein Supplement - Feeds high in protein, mixed with grains to provide a balanced ration, e.g. soybean meal, fishmeal.

Proven Buck - A buck that has proven his ability to transmit his good qualities by consistently producing animals that are superior to their dams.

Progeny - Offspring of an individual animal.

Purebred - An animal produced by consistent generations of breeding within a recognized breed of goats.

Ration - Amount of feed fed to an animal over a 24 hour period.

R.O.P. - Record of Performance. Federal government sponsored goat testing program for milk and butterfat production.

Registration Paper - Official record issued by Canadian Livestock Records as to the identity and pedigree of a purebred animal.

Roughage - Feeds low in total nutrients and usually high in fibre content, eg. hay, straw, silage.

Rumen - First stomach of the ruminant (cud-chewing) animal.

Scrub - Animal of unknown breeding.

Scours - Disease of young kids in digestive system due mainly to overfeeding and infectious organisms.

Sire - The father of the offspring.

Tattoo - Ear identification markings to identify animals for registration.

T.D.N. (Total Digestible Nutrients) Measure of approximated heat or energy value of the feed, consisting of the total of the digestible energy producing nutrients - protein, carbohydrates, and fat.

Warts - Growth on skin caused by infectious virus (germ).

REFERENCES

The Dairy Goat in Canada, CDA 1441.

Dairy Goats Breed, Feeding & Management American Goat Breeders Association.

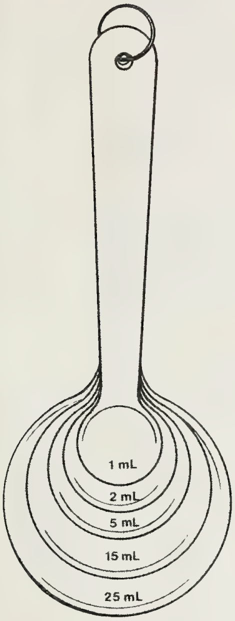
What is a Good Dairy Goat. Canadian Goat Breeders Association.

Control of Insect Pests of Sheep and Goats, 1979, Alberta Agriculture (FS 430/651-1)

Goats, 1980, Alberta Agriculture (435/20-1)

METRIC CONVERSION TABLE

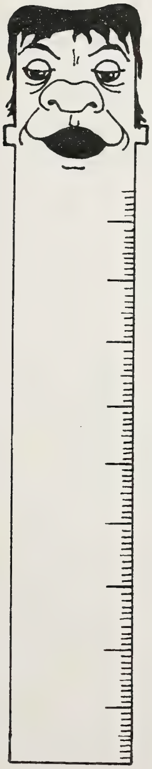
Approximate Conversion to Metric Measures



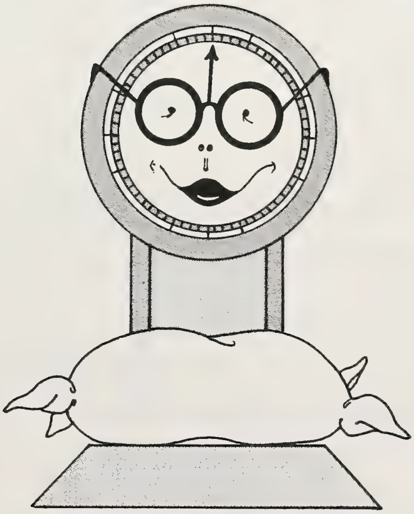
METRIC MEASURES ARE AVAILABLE IN THESE SIZES

250 mL replaces 1 cup
500 mL replaces 2 cups

SYMBOL	WHEN YOU KNOW	MULTIPLY BY	TO FIND	SYMBOL	BASE UNIT
		MASS (weight)			
oz.	ounces	28.349	grams	g	
lb.	pounds	0.454	kilograms	kg	
ton	short tons (2000 lbs)	0.907	tonnes	t	gram
g	grams	0.035	ounces	oz.	
t	tonnes (1000 kg)	1.102	short tons	ton	
		VOLUME			
tsp.	teaspoons	5	millilitres	mL	
tbsp	tablespoons	15	millilitres	mL	
fl.oz.	fluid ounces	28.413	millilitres	mL	
pt.	pints	0.568	litres	L	
qt.	quarts	1.137	litres	L	
gal.	gallons	4.546	litres	L	litres
bu.	bushels	36.370	litres	L	
mL	millilitres	0.035	fluid ounces	fl.oz.	
L	litres	1.760	pints	pt.	
L	litres	0.880	quarts	qt.	
L	litres	0.220	gallons	gal.	
L	litres	0.027	bushels	bu.	
		LENGTH			
in.	inches	2.540	centimetres	cm	
ft.	feet	0.305	metres	m	
yd.	yards	0.914	metres	m	
mi.	miles	1.609	kilometres	km	
					metre
mm	milimetres	0.0394	inches	in.	
cm	centimetres	0.394	inches	in.	
m	metres	3.281	feet	ft.	
m	metres	1.094	yards	yd.	
km	kilometres	0.621	miles	mi.	
		ENERGY			
kcal	kilocalorie	4.186	kilojoules	kJ	
					joule
kJ	kilojoules	0.239	kilocaleries	kcal	



MUNSTER METRE
MEASURES LENGTH



SAM KILOGRAM
MEASURES WEIGHT

LILY LITRE
MEASURES VOLUME

METRIC MULTIPLES AND PREFIXES TABLE

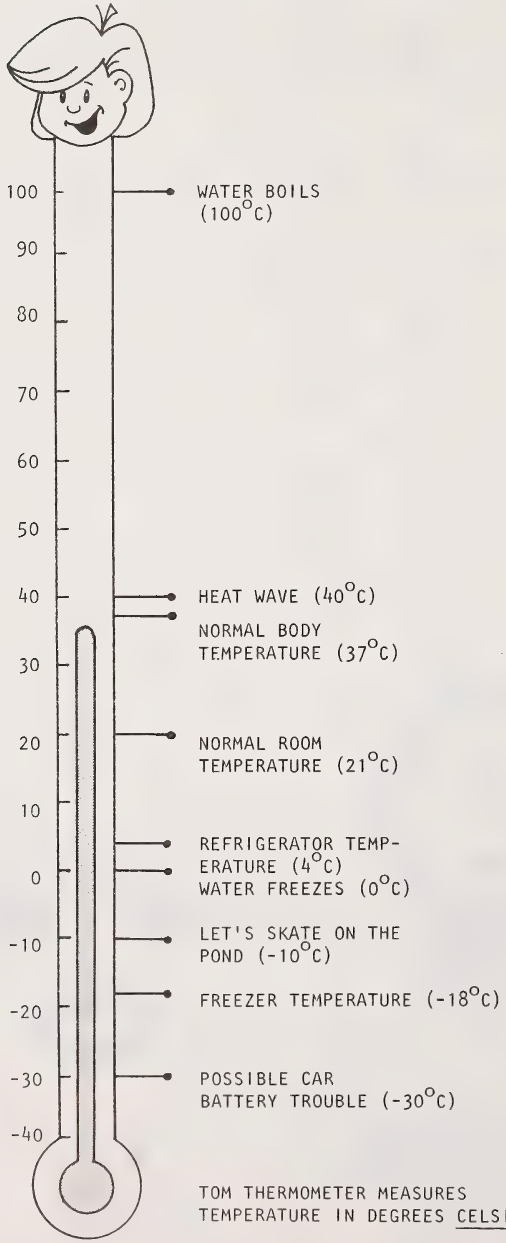
Multiplying Factor	Prefix	Symbol
1,000,000 = 10^6	mega (meg a)	M
1,000 = 10^3	kilo (kil o)	k
100 = 10^2	hecto (hek to)	h
10 = 10^1	deka (dek a)	da
(Base Unit) 1 = 10^0		
0.1 = 10^{-1}	deci (des i)	d
0.01 = 10^{-2}	centi (sen ti)	c
0.001 = 10^{-3}	milli (mil i)	m
0.000,001	micro (mi kro)	µ

(These prefixes may be applied to all metric base units.
Example: Base Unit = litre
Add kilo to litre (symbol kL) = kilolitre. The multiplying factor is 1000. This means a kilolitre equals 1000 litres.)

TEMPERATURE: °F = 9/5 + 32
°C = 5/9 - 32

OVEN TEMPERATURES:

	°C	°F
Very low	120-135	250-275
low	150-165	300-325
Moderate	175-190	350-375
Hot	200-220	400-425
Very Hot	230-245	450-475
Near boil	245-290	475-500


100
90
80
70
60
50
40
30
20
10
0
-10
-20
-30
-40
WATER BOILS (100°C)
HEAT WAVE (40°C)
NORMAL BODY TEMPERATURE (37°C)
NORMAL ROOM TEMPERATURE (21°C)
REFRIGERATOR TEMPERATURE (4°C)
WATER FREEZES (0°C)
LET'S SKATE ON THE POND (-10°C)
FREEZER TEMPERATURE (-18°C)
POSSIBLE CAR BATTERY TROUBLE (-30°C)

TOM THERMOMETER MEASURES TEMPERATURE IN DEGREES CELSIUS (°C)

ADDITIONAL METRIC INFORMATION

from:

Metric Branch
Alberta Government Services
12th Floor, Park Square
10001 Bellamy Hill
Edmonton, Alberta T5J 3C1

Metric Commission Canada
Box 4000
Ottawa, Ontario

Information Division
Canada Department of Agriculture
Ottawa, Ontario K1A 0C7

District Extension Office

OR

Publications Office
Alberta Agriculture
9718 - 107 Street
Edmonton, Alberta T5K 2C8

PROJECT EVALUATION

In order to keep meeting your needs in the 4-H program, we would like your assistance in completing this evaluation form. Make your suggestions on this sheet as you use this book. After the project has been completed, mail this form to:

Project Evaluation
4-H Branch
Alberta Agriculture
7000 - 113 Street
Edmonton, Alberta
T6H 5T6

(use another page if required)

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